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POST GRADUATE STUDY IN THE COUNTY MEDICAL SOCIETY

(Foreword)

The most unique development in the work of the county medical society, in Arizona, has been the plan evolved by the Yavapai County Medical Society and the Medical Staff of the Veterans' Bureau Hospital at Whipple. This plan is explained in detail below and an illustrative discussion given in full, first the discussion by the selected group from the society and staff, and then, for comparison, the discussion of Dr. Cabot, followed by the autopsy report.

THE YAVAPAI COUNTY MEDICAL SOCIETY PLAN OF POST-GRADUATE STUDY—HISTORICALLY CONSIDERED

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It is over 2400 years since Hippocrates stated, "The physician must know what others have known or he is constantly liable to deceive both himself and others." This axiom is as true today as when propounded. In conformity with the spirit of medical progress our society holds that the physician must not only know what others **have known**, but must **know** what **others know.** It was with this idea of keeping our members in touch with the progress in medicine that our society evolved the plan to be described later.

In presenting a brief history of the events which led to our present plan we are without ostentation. Rather, let it be said, we ask your indulgence while we recount our struggles to attain a plan of post-graduate study which has been exceedingly helpful and, through the co-operation of the medical officers at Whipple, most successful. In chronicling these events we are, in our humble way, paying a debt to medical history, and perchance we may thereby encourage others to take up this plan of study.

The federation of state associations, known as the American Medical Association, occurred in 1847. Its activities during the first fifty years of its existence were largely confined to "discussion rather than accomplishment." Since its reorganization at St. Paul, in 1901, membership in the Association has been based upon membership in the state medical societies, which are, again, based upon membership in the county societies. Among its many worthy objectives since reorganization, we stress the promotion and standardization of medical education.

The Arizona Territorial Medical Association was organized in Phoenix, May 25, 1892, with Dr. J. A. Miller, president, and Dr. J. T. Green, secretary. During the first ten years membership in the Association was direct, the Judicial Council reporting "favorably" upon the application. At the annual meeting held in Tucson, May 28, 1902, it was voted "that the Association reaffirm its allegiance to the American Medical Association as to reorganization." While the published minutes do not specifically so state, it is our opinion that the Arizona Medical Association underwent such re-organization as was required to conform to the plan of the re-organized American Medical Association. Further, we note that at the Twelfth Annual Meeting of the Arizona Medical Association, held in Tucson, April 22, 1904, the first definite step was taken to organize and affiliate county societies, when its committee on By-Laws, Drs. A. W. Olcott, Ancil Martin and C. E. Yount, "recommended that county societies be at once formed, that we may comply with the

requirements of the American Medical Association."

Prior to 1904, there were several county medical societies in the Territory of Arizona, one of which was in Yavapai County, but none of these were affiliated with the Arizona Medical Association—hence, to secure uniformity of organization, it was necessary to re-organize the few county societies then existing.

Dr. B. T. Davis, the last president of the old Yavapai County Medical Society, authorized the writer to issue the following call: "In accordance with the wish of the American Medical Association and the sentiments of the last Territorial Medical Association meeting, we have deemed it advisable to organize the Yavapai County Medical Society in conformity with the standard laid down by the American Medical Association, and to this end we extend to you a most cordial invitation to meet with us in Prescott on Saturday, June 18, 1904." We received our charter, dated Oct. 25, 1904, and were complimented by the Secretary of the Arizona Medical Association "as being the first county to organize, having the largest enrollment and the greatest enthusiasm." We adopted the constitution for county societies prepared by the American Medical Association, and. in compliance with the provisions of its progressive measures, we began to prepare "attractive programs for each meeting—and urged each member to take part in the scientific work." In furthering this idea we used the outline in the Councilor's Bulletin of the American Medical Association, first, in 1906, in what we called our Chautauqua idea. However, it was found necessary to modify it greatly to make it at all workable for a society which could not hope to muster more than seven or eight regular attendants at any meeting. For the next five years our society's scientific committee prepared the programs, which we followed as faithfully as such a small number of busy doctors could, each year showing progress in scholarship and improvement in method. The year 1912 was a propitious one for Arizona—we were received into the sisterhood of States, and doubtless feeling the urge for bigger things, the scientific committee of the Arizona State Medical Association, consisting of Drs. W. W. Watkins, John W. Flinn and I. E. Huffman, outlined a brilliant course of study for county societies, based on a modification of the course prepared by the American Medical Association. They circularized the doctors of the state as follows: "During the month of November (1912), the county societies will study Infections, including infectious diseases, localized and general infections, chronic bacterial infections, etc. The program for these studies will be based on clinical cases reported to the undersigned committee of the Association. In order that this program may be as comprehensive as possible, and of universal interest, we wish doctors from all parts of the state to report to us their interesting cases of infections and infectious diseases. Upon these reports received by us BEFORE OCT. 15th, the program will be based. This program will be distributed to every doctor in the state for study in his society or at home.

"The program wil consist of:

1. The outline of topics to be studied, as suggested by the case histories;

2. The case histories received before Oct. 15th;

3. References to articles in current literature on the topics of the program;

4. Abstracts of the most pertinent article recently published in the bulletin for December, a resume of the studies and of the discussion in the various societies will be given.

"What is wanted, NOW, is for you, Doctor, to sit down and write us on the attached sheet the history of a case of infection, which will suggest an interesting topic for society meetings."

Our files show that ten histories were edited, printed and sent out to the doctors for the November meetings, together with a Bulletin giving a most elaborate outline covering the four weekly meetings for the month. The Bulletin stated that for December "the program will be Injuries to bones and joints—also if the societies like this plan, they will endorse it by sending in histories for December. Remember that if case histories are not received, the Committee will abandon the plan, as it will be sufficient evidence that the County Societies prefer to formulate their own programs." The answer! Only two case histories were received; the program for December was not published. As I look back 15 years I wonder how such an erudite plan could have failed—the correspondence and editorial work which it entailed was enough to have kept a corps of workers busy, yet Dr. Watkins alone carried on, slaving for us, in the hope that each member of the State Association might receive some good from this united scientific study. Will you pardon me if I again quote, from the records, Yavapai's stand: "Dear Dr. Watkins: I am authorized to convey to you the sin-

cere appreciation of our soceity for the thorough and painstaking work you have done in arranging for the post graduate course for the county societies and the presentation and study of case histories. Not only do we feel the spirit of kindred studentship, as each Tuesday night we pursue together the same subjects which we know our brother physicians throughout the state are discussing, but we also feel that we are experiencing more intense interest and a greater good by the co-operative method than we have hitherto experienced. We desire to convey to you our thanks for the very great personal effort which such extensive work has placed upon you and we pledge you our hearty support."

The plan failed to go over because of inertia in the county societies—they lacked the will to do—a case of Love's Labour Lost! No, let us consider Dr. Watkins's effort as comparable to Haller's, although the latter's "supreme contribution was his voluminous work on the history and literature of surgery, yet his important accomplishment, in Mumford's view, was 'his teaching surgeons how to study' and by his example he did more even than by his preaching." (Royster.)

Dr. Watkins sought criticism of the plan several months before it was published. We quote a portion of one critique because, though sadly true, it brings before us a concrete objection of a type we had not known existed, displaying a selfish trait of character which our plan would seek to destroy in its incipiency should it ever appear. In presenting his case history before the County Medical Society, the doctor had taken great pains to make it clear that the patient was a brother physician. "I made as careful recitation of the case as I could and begged for help." No help was forthcoming, so after the meeting he sought out one of "our oldest and staunchest members. I asked him why it was that so interesting a case and one that should have our augmented thought on account of the patient being a doctor, had fallen so flat. Then I heard some words of practical wisdom; I'll try to repeat his message: 'Young man, you have much to learn. Not the least of the things years have taught me is that brains and efforts should be rewarded. I have spent many years in laying by a store of knowledge and experience. This has cost me work and money. It is worth money. I can solve your problem, but I cannot solve it gratis. My fee for consultations is $10.00, and these medical society dodges to sponge my opinion and advice gratis is one bait I do not nibble at." This in the year of our Lord 1912!

The Yavapai County Medical Society continued with its post graduate work, developing and trying out several methods. In 1914 we devoted ten meetings to post graduate study, with an average attendance of the Prescott members of 71.4 per cent, using a system of marking much more strict than we do today.

In 1915 we discovered the value of the Cabot Case Records and Postmortem reports, when adapted to county society post graduate study, using them first on September of that year.

The world war now began to levy on our time and personnel and until 1920, when we were again permitted to enjoy the blessings of peace and the pursuit of happiness, little was done by the Society in post graduate work. In his report for the year 1919, the secretary noted that "we have done nothing in the way of self-improvement or post graduate work this year." Whereupon, having made the observation, he was authorized to make such arrangements for post graduate study as might seem best for our society in the pursuit of post graduate work. The course was to begin with special lectures on the army standardization of chest examinations, but after one lecture the illness of our instructor terminated the course.

In his report for the year 1920, the secretary called the society's attention to the fact that there were nineteen wide-awake, well informed medical officers of the Public Health Service stationed at Whipple, and it might be that some post graduate work could be done jointly with them, to our mutual advantage. Again the secretary was "instructed" to make whatever arrangements he could with the officers at Whipple for post graduate work. The record further shows that Dr. Southworth, acting president, appointed Drs. Flinn and Yount to represent this society in conference with a like committee from Whipple, consisting of Drs. Allee and Fahy. This committee met and recommended that we take up the Cabot Case Records, presenting three new cases at each meeting, with two doctors from Whipple and one from our Society as "essayists," and two selected to open the discussion on each of these "cases." On Tuesday evening, Feb. 15, 1921, we held our first joint meeting at Whipple, using the Cabot Case Records described above.

In November (1921) the writer took occasion to express to the Publishing Department of the Massachusetts General Hospital, our appreciation of their case records, in these words: "Our society, affiliating with the medical officers at Whipple, have gotten more real good and definite benefit

and stimulus to better work through the systematic study of the Cabot Clinics than by any other method which we have ever pursued." In reply Miss F. M. Painter, assistant editor, said, "Thank you for letting us know the practical value of the Records to your Society. It is always a pleasure to know that their possibilities for usefulness are being developed with appreciation."

In 1922 Dr. Loewy replaced Dr. Fahy on the program commtitee, and in November we started out with the three group competitive idea—"meetings will be held every second Tuesday as heretofore, alternating between Whipple and the Yavapai Club. Two groups will present cases from the 1921 Cabot Clinics. The odd group will give a half hour review of current medical literature as per assignment. They will also be the judges and vote by ballot to determine which was the better of the two groups presenting cases. They will take into consideration attendance, presentation of subject and general excellence of discussion, in casting their ballots. Also remember that no group may be marked less than 75 per cent as it is self-evident that the work always done in preparation merits at least that rating."

In 1921 the members of the Yavapai County Medical Society residing in Prescott, in conjunction with the Medical Officers on duty in the U. S. V. B. Hospital, determined to institute a course of post graduate study.

After discussing various plans, it was decided to use the case records of the Massachusetts General Hospital, edited by Richard C. Cabot, M. D., and F. M. Painter, A. B., Assistant Editor, which are published weekly in the Boston Medical and Surgical Journal. The data generally noted in these records consists of the sex of the patient, age, occupation, family history, past history, history of present illness, report of physical examination, record of laboratory and x-ray findings, treatment, and, in case of death, the autopsy findings. Time has proven that our selection of the Cabot case histories was a wise choice. There is no other system of case records published which can be so readily adjusted to the plan of study which we have developed.

All the members of the Yavapai County Medical Society nominally participate in the course of study, but, when it is considered that our membership of twenty is scattered over an area of 7800 square miles of mountainous country, it can be easily understood that, as a matter of fact, the actual membership of the post graduate club consists of the Prescott physicians and the Medical Officers of the Veterans' Bureau Hospital at Whipple, a suburb of Prescott—a group of approximately twenty-four doctors.

During the past six years many schemes for presenting the Cabot cases have been tried out in an effort to improve our method and make our study more interesting. The changes which have resulted in an improved plan have been retained, the others dropped, and, while we may not have attained standardization, we trust that we are rapidly approaching it. Certainly, each year has shown increased interest and more intensive study on the part of the participants. The method used during the past year is the fruit of mature experience and the end result of six years of evolution.

At the beginning of the year all the doctors in the Yavapai County Medical Society and at Whpiple are divided into three "groups," balanced as equally as possible as to the professional attainments, specialties and ability to "talk on their feet." Each group elects a leader or team captain. Sessions are held every two weeks, alternating between Prescott and Whipple. The course, which is planned for twelve meetings, begins early in October and is concluded in April. The first, fifth and ninth meetings are "open" meetings. The programs for these are arranged by the group captains and conform to the usual type of medical society meeting, i. e., presentation of papers, case reports, clinical cases, stereopticon, x-ray, autopsy and other pathological exhibits. At the remaining nine meetings, two of the three groups, in rotation, meet each other in competition in the presentation of Cabot case histories, until each group has discussed six cases. The two competing groups are each given a case history as nearly equal in difficulty of solution as is possible to select, and they are graded on the skill with which the case is presented, the accuracy of their diagnosis, as compared with Dr. Cabot's and the autopsy findings. The judges, three in number, are chosen at the beginning of the course and serve for one year.

The grades given by the judges at each meeting are placed in a sealed envelope, which is then given into the custody of the secretary, who retains them until the end of the year, when they are all delivered to the judges, who determine the winning group. In addition to the grading of the judges, an allowance of twenty points out of a possible one hundred is given a group for a perfect attendance record each night. This rating is also taken into consideration in determining the winner. The judges are

also custodians of the Boston Medical Journal, as it is received through the mail, and are charged with the duty of selecting the cases for discussion, having them mimeographed and distributed to members two weeks in advance of the meeting.

At competitive meetings each group is allowed thirty minutes, neither more nor less, for the discussion of the case assigned them by the judges. The captain of each group decides as to how the case will be presented by his group and how many and who shall speak for his group. The only restriction placed upon him is that his group may not exceed thirty minutes and he must call upon his various group members an equal number of times in the year. After a group has concluded its discussion, one of the judges reads the discussion of Dr. Cabot and the report of the autopsy findings, after which the judges retire and prepare their rating of the group.

Immediately after the close of the course of study an annual banquet is held at which, it is needless to add, the attendance is 100 per cent. After dinner, each group captain is requested to tell how and why his group won. Then the Chairman of the board of judges announces the winning group. The two losing groups pay for the dinner. The winning group is, therefore, the guest of the two good losers. This year the winning group won by 11/100 of one per cent and the lowest group was within one and one-half per cent of the winner.

RESULTS

(1) This year we had an average of twenty-one doctors at each meeting, or a general average of 99.5 per cent attendance for the three groups for the series of winter meetings. We mention, with considerable pride, this remarkable percentage for attendance and present it as evidence that we have developed an interesting plan for post graduate work.

(2) Men who, at the beginning of the course, could not get up on their feet and talk because of "stage fright," are now consuming the full time allotted to them, discussing their cases with zeal and enthusiasm.

(3) The division of the doctors into well balanced groups and placing these groups in competition with each other is believed to be an important feature of the scheme for study which we have developed, because it promotes fellowship and good feeling, a wonderful degree of cooperation, and stimulates each individual in the group to engage in intensive study, in order that he may carry his share of the group burden.

(4) Last, but most important of all, it has taught us to carefully evaluate and draw logical deductions from the data available, and we are confident that this training has made better doctors of all of us.

CONCLUSION

"It means much to have been with the masters. Not all of us, unfortunately, can trail with the great, or find opportunities for training under the celebrated of the earth." (Royster). However, for nine evenings each winter since 1921, we have, figuratively speaking, transported Dr. Richard C. Cabot and his colleagues from the Massachusetts General Hospital, Boston, to Prescott, Arizona, at no greater COST than a subscription to the Published Cabot Clinics, or the Boston Medical and Surgical Journal, plus the EFFORT necessary to operate the plan just described. The effort would have been abortive years ago, were it not for the fact that we have at Whipple and in our County Society, doctors with a genuine thirst for medical knowledge, a determination "to know what others have known," and what others know, coupled with a will to do and an inherent compatibility, which enables us to work together as a guild.

Gentlemen, we recommend this plan for your earnest consideration, and we predict that, if you adopt it in your respective county societies, you will not be disappointed in the results you will obtain, and that, after experience with it, you will be as enthusiastic about it as we are.

My colleagues will now discuss a case that was selected for them by the Chairman of the judges, who served our Society during the past winter. This will be presented exactly as it is done in our Society. The members presenting this case have blasted out their diagnosis from the data given in the case history, and have not read or been informed as to what Dr. Cabot's diagnosis was, or the autopsy findings.

INTRODUCTION

Dr. R. N. Looney, Prescott, Arizona

The members selected for the discussion of this case are Drs. W. E. McWhirt, E. W. Loewy, and John W. Flinn.

Dr. McWhirt will make the presentation of the case, as it has been handed to us. Dr. Loewy will discuss the history and the general symptoms, while Dr. Flinn will discuss the diagnosis and symptoms bearing on the final diagnosis. After this the sealed discussion of Dr. Cabot and autopsy report will be broken open and read.

PRESENTATION OF CASE HISTORY

Dr. W. E. McWhirt, Whipple, Ariz.

A Russian Jewish furniture finisher forty-one

years old entered August 5 complaining of breathlessness on exertion for the past month.

Seven weeks before admission he found he tired easily. At the end of his day's work he felt like sleeping, whereas formerly he had been quite active. His appetite had been very poor. He had frequent belching of gas, occasional nausea, and once vomited. He occasionally had dull epigastric pain. The symptoms increased until four weeks before admission he had to give up his work and for several weeks had been resting on a farm. He became very weak and had dyspnea and palpitation on exertion. The dyspnea increased progressively. For four weeks his skin had been very yellow. During the past week he had felt dizzy even while lying in bed, and had had not headache but a feeling that his head was heavy and large. For a week he had urinated once at night. His best weight was 150 pounds; his weight in the Out-Patient Department August 3, 148 pounds.

Records of the Out-Patient Department show a visit ten years before he entered the wards. His chief complaint then was "pains all over." Examination was negative. The blood was not examined. Two days before admission he again went to the Out-Patient Department complaining of "dizzy and fainting spells."

The family history is unimportant.

For the past ten years he had had marked shooting pains over his body. Eight years before admission he had a touch of influenza. For six years he had had attacks of rheumatism in the feet, knees, back and hands. For six years he had had pyorrhea. His teeth were carious. Occasionally while working inside he had nose-bleed. He used shellac, varnsih, paints and benzol in his work. He formerly had periods of dizziness. He had occasional chest pain, not severe.

Examination showed a well nourished man with a lemon yellow pallor. Mucous membranes extremely pale. Teeth decayed, many missing. Marked pyorrhea. Lungs clear. The apex impulse of the heart was in the fifth space, coinciding with the left border of dullness, 10 centimeters from midsternum, 1 centimeter outside the midclavicular line. No other enlargement to percussion. Action regular. Sounds of poor quality. Pulmonic second sound accentuated. A harsh systolic murmur along the left sternal border. Pulses and arteries normal. Blood pressure 110/60 to 140/55. Abdomen rather full. Shifting dullness in flanks. No fluid wave. Slight tenderness in the right upper quadrant below the costal margin. Rectal examination negative. Reflexes active. Extremities hypersensitive to vibration. Fundi showed several small patches of hemorrhage. Discs somewhat indistinct. Some small white patches near the hemorrhages,—scars.

Amount of urine 33 to 80 ounces, alkaline at one of twelve examinations, neutral at one, specific gravity 1.005 to 1.022, the slightest possible trace of albumin twice, sediment showed occasional white blood corpuscles in five specimens, occasional reds in four. Renal function 50 per cent. (Two tests.) Blood examination at entrance showed 2,900 leucocytes, 21 per cent. polynuclears, 26 per cent. lymphocytes, 1 per cent. eosinophiles, 6 per cent. large mononuclears, 2 per cent. basophiles, 8 per cent. unclassified; 36 per cent. myelocyte series; hemoglobin 50 per cent., reds 1,376,000, anisocytosis, poikilocytosis, macrocytosis, stippling, polychromatophilia, platelets diminished, reticulated cells 2 per cent. Later counts are indicated in the chart. Wassermann negative. Non-protein nitrogen 33 milligrams. Icterus index 5-8. (Slight hemolysis.) Bleeding time 12 to 14 minutes. Clotting time 10-14 minutes. Clot retraction definite but poor after twenty-four hours with three-quarters volume of white clot uppermost. Consistency firm and rubbery. Gastric analysis: fasting contents, 31 cubic centimeters, turbid, colorless, acrid, mucoid; free hydrochloric acid 13, total acid 28, guaiac negative. Test meal 33 cubic centimeters, white, sweet, thick bread suspension, free hydrochloric acid 05, total acid 50, guaiac negative. Blood culture August 13 showed streptococcus and staphylococcus.

X-ray August 9. The outline of the left kidney was indistinctly seen. It seemed rather large. The right kidney was not made out. No abnormal shadows were present. Barium enema: colon appeared normal in contour. No filling defects seen to suggest organic disease. The palpable tumor mass appeared extrinsic to the transverse colon. (The clinicians found no mass.) There was nothing unusual in the appearance of the lungs or the long bones. The heart shadow was rather wide across the base in the region of the auricles. In the left lower molar region were two rounded areas of diminished density suggesting bone destruction, perhaps secondary to recent extraction, but the most anterior area was rather large and suggested partial bone destruction. September 3 there had been no marked change in the appearance of the left portion of the mandible since the previous observation. The area of diminished density was still present. September 8 the finidngs were the same. There was no positive evidence of osteomyelitis.

The temperature was normal at entrance, then 99° to 105° until operation. Before operation the pulse was 80 to 120, the respiration 18 to 36.

Consultations: Oculist: Hemorrhagic retinitis, both eyes. Numerous retinal hemorrhages confined to arteries at the terminals. Hemorrhages are accompanied by small grayish-white spots. Optic discs are slightly paler than normal and appear slightly blurred. Several red patches with white centers are present. **Dentist:** Lower left molar extracted. X-ray shows no pathology in bone. Will check up in a week with repeats to determine any advancement in possible beginning of necrosis. **Eye and Ear X-ray:** Sinuses negative. **First surgeon:** Infection of tooth socket, probably osteomyelitic, present. No treatment indicated other than oral lavage. **Second surgeon:** Advise operation.

There was much difference of medical opinion as to the diganosis. August 14 the temperature rose to 105°, the respiration to 35. There was expiratory grunt and at the right base dullness, loud voice and breathing and moist rales. It was thought this might be a terminal event; but the following day the temperature fell to 101° and the rales disappeared. The abdomen was distended. August 16 there was definite gangrene of the cheek. That day 700 cubic centimeters of blood was transfused. Two days later the jaw looked better and the patient felt better.

It was believed that operation offered the only hope. August 20 it was done, followed by transfusion of 600 cubic centimeters of blood. Two days later there was apparently some pneumonia involving the left lower lobe. The leucocyte count was 20,000. The temperature was 102°, the pulse 130, the respiration 53. He improved considerably and by the 26th the temperature was nearly normal, he looked much less anemic and felt stronger and the lung condition was almost cleared up. He continued in about the same condition, with some temperature. September 1 there was some infection and hemorrhage in the region of the left lower posterior molar. Two days later he felt and looked better. Blood examination, however, showed little improvement. A smear showed the red cells in general well filled, though some showed achromia; moderate poikilocytosis, few macrocytes or true tiny microcytes, occasional polychromasia, an in-

frequent normoblast, no megaloblasts or megakaryocytes. Platelets seemed essentially normal, but were found only one to 75 red cells. There were many white cells of which the majority were leukoblasts,—i.e., very immature, abortive and sport cells. A "crude classification" was made,—18 per cent. polymorphonuclears, 36 per cent myelocytes, 22 per cent. premyelocytes, 5 per cent. myeloblasts.

From this point the patient went downhill with increasing rapidity. On the 19th he was delirious. The leucocyte count was 1600. September 20 he became comatose. That afternoon he died.

GENERAL DISCUSSION

Dr. E. W. Loewy, Whipple, Ariz.

The history and findings in the case we have for discussion, have just been given you by my predecessor. The signs and symptoms involve every region of the body and hint at many possible diagnoses, but the one outstanding feature in the report is the blood examinations, which show a very definite anemia of high degree.

The problem which should first engage our attention is, whether or not sufficient signs and symptoms are present to justify us in diagnosing some condition or disease to which the anemia is secondary.

The mention of the large left kidney in the x-ray report makes us think of those organs as the possible offenders, but the normal non-protein nitrogen test and the absence of high blood pressure, enlarged heart, loss of weight, influence us to rule out kidney disease of sufficient advancement to cause such a grave anemia, even with a trace of albumin and a 50 per cent renal functional test. It seems probable that such changes as are present in the kidneys can be considered secondary and not primary to the anemia.

The absence of blood in the urine, lack of cachexia and of metastases would rule out malignant disease, especially hypernephroma.

The pronounced yellow color of the skin, together with prolonged but indefinite symptoms of indigestion, leads us to inquire into the liver as a possible primary offender. The absence of any marked tenderness or any enlargement, and the low icterus index, force us to conclude that the discolored skin is merely part of the picture of anemia.

A history of increasing weakness and dyspnea always suggests a heart lesion. Could there be an endocarditis or any other cardiac condition present that is the basis for this man's condition? There is a slight enlargement and a systolic murmur present that is not transmitted. It is much more probable, judging from the meager information given, that the heart signs are caused by the anemia, as no proof exists of an organic lesion.

The palpable tumor was found in the abdomen by the roentgenologist, but not found by clinician, and the shifting dullness in the flanks, which, of course, means fluid, would lead us to investigate the gastro-intestinal tract for malignancy. The absence of loss of weight would be almost sufficient to rule out malignancy, even if we did not have a negative x-ray and chemical analysis of the stomach contents to assist us. With both taken into consideration, the diagnosis of malignancy in the gastro-intestinal tract is untenable, in fact there is no definite evidence of the existence of malignancy anywhere. The x-ray shows the lungs, mediastinum, long bones, negative. This causes us to rule out at this point a form of secondary aplastic anemia, known as myelophthisic anemia, caused by metastases of malignant growths into the red bone marrow, which metastases so interfere with blood production of the red bone marrow as to present a blood picture somewhat similar to that shown in this case.

One of the most frequent causes of anemia is sepsis, of which we have a suspicious history in this case. For six years he has had pyorrhea and attacks of rheumatism, which shows a condition of chronic infection. He evidently had an abscessed tooth, which the dentist extracted, which extraction was followed by gangrene of the cheek. They also discovered a probable osteomyelitis of the lower jaw, the diagnosis of which rested largely on x-ray reports of rarefication. An operation was done, probably to drain the osteomyelitis. About this time, or shortly before, a blood culture showed positive for streptococci and staphylococci, which certainly established a diagnosis of septicemia. A final diagnosis of septicemia with osteomyelitis of the lower jaw as the focus, and a profound secondary anemia, would most beautifully explain the evolution of this case, were it not for the fact that we must take into consideration the history, which shows that the profound anemia existed at least seven weeks before we have any hint of septicemia being present. Furthermore, he lived exactly one month after his operation and his progress notes seem to show that septicemia was not a factor in his death.

We seem to have exhausted the most common causes of anemia, especially those covered by the history of the case, and are no nearer a diagnosis than when we started, but, tucked away in an inconspicuous statement in the history, is the following: "He was a furniture polisher and used benzol in his work."

He was in daily contact with this chemi-

cal, which we believe to be significant and presenting a key that unlocks the mystery. Chronic benzol poisoning takes the form of an aplastic anemia. Benzol is a powerful leukotoxin, destroying the white blood cells in the circulating blood and the parenchyme of the blood-forming organs. Marrow tissue is damaged more than the lymph glands, with a consequent greater destruction of the granular leukocytes than the lymphocytes. The erythroblastic tissue of the bone marrow is destroyed, although the red cells circulating in the blood are damaged relatively less. Exposure may be for as short a time as one week. Twenty parts of benzol to 10,000 of air may be poisonous. Eighty per cent of the benzol is absorbed when exposed. There is no specific treatment; even after withdrawal from the toxic influence, the pernicious effect may continue.

We believe that this man suffered from chronic benzol poisoning that produced an aplastic anemia, and that all his complications were due to this anemia.

With this for a tentative diagnosis, let us see how nearly it explains the facts given us.

He gives a history of dizziness and dyspnea, feels tired and weak, palpitation on exertion and, on account of the weakness and dizziness, is compelled to give up work and rest on a farm. This can be accounted for by his severe anemia, as also the lemon yellow pallor of the skin, hemorrhagic retinitis, nose bleed, retardation of blood clotting and the blood pictures presented.

As we have previously ruled out all secondary anemias except that of benzol poisoning, it remains for us to rule out progressive pernicious anemia. A primary anemia in which no cause can be found, with a more or less characteristic blood picture. In pernicious anemia we have a disease with a profound blood destruction as a background. It vents itself particularly upon a destruction of the red blood cells, an hemolysis very severe in character, with the blood producing tissues untouched. The liver and spleen are enlarged, the color index of the cells is high. There is an heroic attempt upon the part of the blood-producing elements in the bone marrow to turn out red cells to replace those destroyed, hence we have set free in the circulating blood, great numbers of abnormal red cells that are immature in character, many nucleated reds being found. But the blood destruction is more rapid than the production, hence the gradually decreasing red count, till a fatal issue occurs.

In this case the blood picture shows a marked leukopenia and no new blood production. The red cells are low in number, but there does not appear to be any marked attempt of the hemipoitic areas in the red bone marrow to throw out the immature cells. No blasts are present, excepting a few just prior to death. The liver is not enlarged, nor is the spleen, to any marked degree. There is also a depressed condition of the production of the granular type leukocytes. The count is 2900, 1900, 1600, with a conspicuous lowering of the granular cells and a relative increase of the lymphocytes.

When we consider that, in chronic benzol poisoning, we have a destruction of the blood-producing tissue in the red bone marrow, which causes a deficiency in the production of the red blood cells and the granular leukocytes, we can readily see why the lymphocytes, produced from lymphatic glands, would not suffer materially in this disease. We can also see why pernicious anemia is not considered, as there is no production of young red cells.

Let us approach the septicemia and lung condition in view of our diagnosis. Nothing further is noted in the history concerning the septicemia, as the infection did not run a characteristic course. There were no chills, or septic temperature, with the probable exception of the times his lungs showed evidence of involvement. He survived both lung conditions and his temperature reached nearly normal on August 26th, and he did not die till September 20th.

We have two lung conditions to consider in connection with the jaw infection and operation, one before and one after operation. The first condition came on suddenly, with expiratory grunt, increased temperature, pulse and respiration, dullness, increased voice and moist rales at the right base; this was considered a terminal event, but, to their great surprise, the next day the patient improved and all lung signs disappeared. This could hardly be called a pneumonia, but was probably due to an embolus. There is no blood count recorded. The second lung condition, somewhat similar to the first, but named in the history as a pneumonia, occurred after the operation, with a blood count of 20,000, but no differential count. If it had been made it would probably have shown a lymphocytosis, as our final diagnosis would indicate. If a pneumonia, it was probably an aspiration affair, following the operation on the jaw. Perhaps it was another embolic process, as benzol is a fat solvent and causes fat emboli. In either event the patient survived it also, to die later of his anemia.

Our diagnosis is: Chronic benzol poisoning; secondary aplastic anemia; septicemia.

My colleague, Dr. Flinn, will now discuss, in more complete detail, the blood picture and blood conditions bearing on the diagnosis of this case.

DISCUSSION OF DIAGNOSIS

Dr. John W. Flinn, Prescott, Ariz.

Two questions naturally present themselves regarding the blood condition in this case. The first is, on what part of the blood picture does one base the diagnosis of aplastic anemia. The second question is, what is the underlying pathological condition which gives rise to the symptom-complex known as aplastic anemia.

Although the word anemia literally signifies lack of blood, its generally accepted meaning is restricted to a reduction in the amount of hemoglobin in the blood. Since hemoglobin is found in the red blood corpuscles, its amount depends on the number and content of these corpuscles. In health the number of red blood corpuscles is kept at a fairly definite equilibrium by a nicely adjusted relationship betwen red blood cell formation and red blood cell destruction.

In certain diseases, however, this equilibrium becomes disturbed and an anemia is produced, either by a deficiency in red blood cell formation or by an excess of red blood cell destruction.

The red blood cells, you will remember, are formed exclusively in the bone marrow. They are destroyed in the blood stream, in the spleen and in the liver. Any deficiency in the blood forming cells of the bone marrow will produce an anemia. Any excess of blood destruction in the blood stream, in the spleen or in the liver will cause an anemia.

Thus you will see that anemias, from the standpoint of their origin, naturally divide themselves into two great classes: first, those due to deficient blood formation; and second, those caused by increased blood destruction. Aplastic anemia is the archtype of the first class; pernicious anemia is the outstanding example of the second class. In other words, in aplastic anemia the underlying pathology is a degeneration of the blood-forming cells of the bone marrow. In pernicious anemia the symptomatology is produced by hemolysis—by an increased destruction of the red blood cells.

You will remember that, histologically, bone marrow contains, in addition to the marrow plasma cells, three other distinct types of cells: first, erythroblasts; second, myeloblasts; and third, giant cells, or megakaryocytes. The erythroblasts develop into normoblasts, which finally lose their nuclei and enter the blood stream as erythrocytes, or red blood cells. Myeloblasts produce myelocytes, and these in turn become the granular leukocytes of the blood-stream—the polynuclear neutrophiles, the eosinophiles and the basophiles. The giant cells or megakaryocytes produce the blood platelets. The lymphocytes, you will remember, are not formed in the bone marrow but are produced in the lymphatic tissue of the spleen, the intestines, the tonsils, etc., and in the lymph nodes.

The question which now naturally arises is, what changes in the blood picture do we expect to find in each of these two classes of anemia. In both classes we naturally expect a considerable reduction in the number of red blood cells. In the pernicious type, however, this reduction is caused by an increased destruction of these cells. What is the effect of this excessive hemolysis? The effect is a demand on the quite healthy bone marrow for increased production of red blood cells. In response to this demand, the bone marrow becomes stimulated and hyperplastic. In its efforts to speed up production, immature cells are thrown into the blood-stream, and the blood picture shows blasts of various kinds,—erythroblasts, normoblasts and myeloblasts. These are the two outstanding characteristics of the pernicious type of anemia: first, evidences of hemolysis; and, second, signs of hyperplasia of the blood-forming area of the bone marrow, evidenced by immature cells in the blood stream. There is no noticeable change in the white count, that is, either in the number of granular leukocytes or of lymphocytes.

In the aplastic type of anemia, on the other hand, instead of having a hyperplasia of the blood-forming cells of the bone marrow, we have an actual degeneration of those cells. We have, in fact, an atrophy of the blood-forming areas in the bone marrow, and a replacement of these areas by fat and connective tissue. What is the consequence of this atrophy? The consequence is, not only a lessened production of red blood cells and granular leukocytes, but also a total lack of response on the part of the blood-forming areas to the demand for more cells. These areas are degenerated. They are unable to respond to the demands of the blood, no immature cells are found in the blood stream. Moreover, as there has been no blood destruction, no signs of hemolysis appear. There is no noticeable change in the number of lymphocytes.

This, then, constitutes the essential difference between these two great types of anemia. In the aplastic type we have an

atrophy of the blood-forming areas of the bone marrow, causing a marked decrease in the number of the red blood cells and of granular leukocytes. As these atrophic areas cannot respond to the demand for more blood cells, we have no immature forms in the blood stream. As there has been no blood destruction, we have no signs of hemolysis. In the pernicious type of anemia, we have a marked destruction of red blood cells indicated by definite signs of hemolysis. This blood destruction leads to a hyperplasia of the blood-forming areas in the bone marrow and immature cells in the blood stream. There is no great change in the number of granular leukocytes.

Turning now to the blood picture in this case: We find (1) marked reduction in the number of red blood cells and of granular leukocytes, with a practically normal lymphocyte count; (2) anisocytosis, poikilocytosis and stippling, all of which are found in any severe anemia; (3) polychromatophilia, indicating the presence of a small number of immature red cells, and we have reticular red cells pointing to slightly increased marrow activity; (4) a high color index, which, with the lemon-yellow pallor of the skin, indicates hemolysis.

What, then, is the general interpretation of this blood-picture? As is usually the case, the blood-picture is not pathogenic; blood-pictures rarely are. One nearly always must turn to the history and the symptomatology to clinch the diagnosis.

One's first impression of this blood-picture is that it points rather strongly to an aplastic anemia. Closer study, too, confirms this to a considerable degree. We have here a marked lack of red blood cells and of granular leukocytes, with an almost entire absence of immature cells. It is hard to account for this part of the picture by any other condition than a degeneration of the blood-forming areas of the bone marrow. On the other hand, however, we have distinct signs of hemolysis, a few immature blood cells, and some indications of increased marrow activity.

Turning now to the history and symptomatology of this case, do we find anything which will help us in interpreting this rather complicated blood-picture? We think we do. In fact, we are prepared to take the definite position that our diagnosis explains beautifully the blood findings in the case.

What do the history and the physical examination reveal? They show a man who has worked for years in benzol fumes. Benzol is one of the most generally recognized causes of degeneration of the blood-forming areas of the bone marrow, leading to a very definite secondary aplastic anemia.

But benzol gives rise to only a partial aplasia of the blood-forming areas of the bone marrow. "Small areas of normal or even compensatory hyperplastic marrow may be found." This would account for the few immature blood cells in the circulation and for other very slight signs of increased marrow activity.

This would not, however, account for the hemolysis. But there is another very distinct feature to this case. Signs, symptoms and blood culture prove conclusively a streptococcus septicemia. We believe this quite sufficient to account for the blood destruction.

Our diagnosis is chronic benzol poisoning; secondary, aplastic anemia; general septicemia, probably secondary to tooth-socket infection.

DISCUSSION

By RICHARD C. CABOT, M. D.

This is a set of general symptoms which with the extreme pallor and the low red count that I see below makes one think that most of his symptoms are due to some form of anemia, whether primary or secondary one does not yet see.

You get a large pulse pressure with a great many anemias, both primary and secondary. It does not help you in diagnosis as long as there is no reason to suspect an aortic lesion.

I think we can see no reason to suspect his kidneys of anything in particular.

"Blood culture August 13 showed streptococcus and staphylococcus." Rather unexpected. We have not had anythnig to suggest fever. One does not look for anything like this blood culture. One wonders whether it is going to be confirmed. There was no positive evidence of osteomyelitis, which I think they are thinking of because of the positive blood culture.

I do not remember anything about his spleen, but I take it it was not enlarged.

A House Officer:: The spleen was not palpable.

Dr. Cabot: We have no reason to suspect it is enlarged. We do not hear anything more about the mass or enlargement of the lymph glands.

Do you know anything about this abdominal operation, Dr. Jones?

Dr. Chester M. Jones: Yes, sir. It was a splenectomy.

Dr. Cabot: The spleen was not felt?

Dr. Jones: No, sir.

DIFFERENTIAL DIAGNOSIS

Dr. Cabot: Now let us put together the definite data as we have them here. We have a positive blood culture, which apparently was not repeated. It does not look as if they thought much of it. I do not know why. It showed both streptococcus and staphylococcus. We naturally associate that with the process in his jaw. Whether or not it is associated with that process I do not know, but they evidently were worried about that process in his jaw. The rest of the body so far as I see shows nothing to explain the positive blood culture until we get this pneumonic process, although it does not look like the main thing.

A transfusion comes in and does him good. So we have a patient who comes in with anemia, we

know he has no enlargement of the spleen, and we have this sepsis, and we have nothing else. I should think this was the natural place to take up discussion as to the cause of this anemia. In the first place we naturally think of pernicious anemia. He is a middle-aged man who without any definite organic lesions such as cancer or tuberculosis or syphilis or nephritis shows a profound anemia. But he ought not to have pernicious anemia. Many of you remember the discussion just a week ago at the Brigham Hospital, where we were confronted with a very similar situation. I shall say now as I said then that the points against pernicious anemia are the absence of any tongue symptoms, the absence of any numbness of the fingers or toes, the absence of any definite evidence of swinging up and down or any remissions, which are almost never absent with pernicious anemia, and lastly the presence of hydrochloric acid on two occasions in his gastric contents. That is strong evidence.. From the blood itself, as far as the red cells are concerned, I do not believe that anyone can say. As far as the white cells are concerned, I would rather not say anything without seeing the blood. The difficulty is that one is at a great disadvantage in looking at blood unless one has stained it oneself. I do not believe it is pernicious anemia from the evidence before us.

What else can it be? Cancer of the stomach is always a good thing to think of on general principles. We get fooled on it so often. Did we have an X-ray of the stomach?

Dr. Jones: There was nothing in the stomach, Dr. Cabot.

Dr. Cabot: Did they get an X-ray?

Dr. Jones: Not of the stomach.

Dr. Cabot: We have this chest plate. It shows nothing in particular in relation to his diagnosis, I take it. I should think then we have no good reason to consider cancer of the stomach any further.

What about sepsis? Can you have sepsis with such a low count? Yes, you certainly can. There are a number of cases on record of puerperal sepsis, and not only cases of puerperal sepsis, with a white count not only low but abnormally low like this. So far as the total white count is concerned I do not see how one can exclude sepsis. The history and the picture in the rest of the case do not seem much like it. It does not seem as if he had enough evidence of sepsis to explain such an extraordinary anemia. There again we should like to know whether or not that blood culture would have been positive again if it had been repeated.

Dr. Jones: The first blood culture showed no growth in one flask and streptococcus and staphylococcus in the other. A second one was taken, but we have no record of that.

A House Officer: It was negative.

Dr. Cabot: Then I should not pay a great deal of attention to that, since one flask was negative and a second attempt got nothing. One takes sepsis as the main cause of death a little less seriously, if that is ruled out.

You all remember the case of anemia which we studied just a week ago and saw the marrow sections thrown up on the screen and called myeloblastoma. That is not yet, I think, satisfactorily named, but as far as the anemia is concerned it caused a myelophthisic form of anemia, where the marrow is pushed out, atrophied, as a result of overgrowth of something else, something else that seemed to suggest none of the lymphocyte series in that case, but rather something of the myelocyte series, so that in the end it seemed to Dr. Minot and the others who talked it over that if it was called a myeloblastoma it would be better than any of the more popular names like leukanemia or aleukemic leukemia, which are very unfortunate names. I certainly do not see any evidence to say that this case is not the same thing. That was the first case with necropsy that I have had anything to do with. Without more study of the blood I cannot say.

Can this be a splenic anemia? Not under any ordinary definition in which that term is used—with a large spleen, which is apparently not present here.

I do not know what kind of anemia it is. It may perfectly well, as far as I see, be the same kind we saw a week ago at the Brigham Hospital. There is nohting in this description of the blood that makes it clearly different from that, so far as I recollect. The only thing that I feel clear about is that it is not pernicious anemia or the ordinary type of aplastic anemia. It certainly does not correspond with that in a good many respects. That is about as far as I can go.

Another condition which I did not mention and which I cannot exclude is lymphoid leukemia with a terminal low count. I have seen a good many cases with a high white count until a terminal sepsis knocked it down, and this blood so far as I can tell by looking at one specimen for a few seconds is not unlike that. If that were true one would expect to find the bone marrow (on which the whole definite conviction here must rest) replaced by cells of the lymphocyte series.

A Student: Could it have been related to his occupational history?

Dr. Cabot: We do not know much about that. There are a number of substances mentioned, but without more study of the amount of benzol he inhaled or the presence of any of their derivatives in his body we cannot go any further. I am glad you mentioned it. There are some substances mentioned there that have caused intense anemia.

A Student: What are your objections to its being an aplastic anemia?

Dr. Cabot: In the first place there is too much evidence of regeneration. In a true aplastic anemia we do not see evidence of regeneration; but there is such evidence here. Then the vast majority of cases are in young girls, usually under thirty.

A Student: In what classification do these sport cells go?

Dr. Cabot: Just as you like—anywhere you feel like putting them.

A Student: If it is a lymphoid leukemia how can you explain the number of myelocytes?

Dr. Cabot: If I were doing that I should not say that they are myelocytes. That is of course a rash thing to do without more study of the blood.

Will you discuss this case, Dr. Jones?

Dr. Jones: This is one of the most doubtful cases I have seen. It is interesting, because nobody was able to agree upon the actual findings in the blood. It was not pernicious anemia, the white cells being entirely unusual for pernicious anemia. There was free hydrochloric acid, no tongue symptoms, no jaundice, and it did not seem like a pernicious anemia clinically. The presenting feature of the case when it came in was bleeding from the mouth and mouth sepsis, and the first effort was to try to determine whether it was primary or secondary, based upon submucous hemorrhages with subsequent infection. Those are very frequent in various types of anemia, but principally in the type that Dr. Cabot has mentioned, namely lymphatic leukemia with a rather aplastic bone marrow, a lowering of platelets, subsequent hemorrhages and then infection. It is rather common for us to see these patients come in with mouth infection. We felt that the sepsis was secondary rather than primary. The question as to the actual process going on was never decided. After a lot of discussion we

finally agreed to compromise and came to the conclusion that probably the case was a so-called aleukemic leukemia, a very poor term, because it does not describe what is going on. The characteristic blood cells of which Dr. Cabot has seen a few were not easily classified. They were not typical lymphocytes and were not typical myelocytes. When we showed them to Dr. Wright he said it was absolutely impossible to classify them—simply sport cells, probably of myeloid origin, but he could not tell. As the disease progressed it was evident that there was more or less hypoplasia, with a lymphocytic or myelocytic formula, rather than a polynuclear, and there was a low white count except on certain occasions, when there was very marked increase in the sepsis and continued hemorrhages from the buccal mucous membranes. Here was a case with marked anemia, a low white count, sepsis and quite a definite amount of aplasia. The spleen was not palpable. We did not know what to do with the man. Transfusion helped him only temporarily. It stopped his hemorrhages for a very short time, a question of two or three days; then the hemorrhage would recommence. We had one case the year previous which resembled this case rather closely. The white cells were not quite the same, but there was aplasia. There was not a large spleen. The man had been transfused repeatedly with very little improvement. We finally did a splenectomy, because the man was in very bad condition and was willing to try any kind of treatment that offered a chance of recovery. He developed a very good remission as far as the red cells were concerned and at present is alive—two years and some months after the operation—with a perfectly normal red count.

We also had one case that was operated upon in the hospital some seventeen years ago and which is a little like this case. The diagnosis was in doubt before operation. The patient did have a spleen that was slightly enlarged. A splenectomy was done subsequently. Within a few months after it the patient improved and at the same time developed a leucocytosis and a blood picture absolutely typical of myelogenous leukemia. She is still living, one of the few cases of this disease that have lived as long as she has following a splenectomy.

With that background, in spite of the fact that the spleen was not enlarged, our only chance of effecting any change in this case seemed to be a splenectomy. This was done. After it he did improve for a short time, the reticulated count went up and the red cells showed a definite increase, outside of transfusion. The white cells however remained abnormal throughout. He finally died from slight hemorrhage and more sepsis.

The diagnosis as far as we were concerned was never settled, but we had felt that probably we had been dealing with a case of peculiar anemia due to a so-called aleukemic leukemia.

Dr. Cabot: Is there anyone else here who saw the case during life?

Dr. Raphael Isaacs: There were certain features in this case that pointed to chronic or subacute benzol poisoning.—the decreased number of platelets, the hemorrhages, the gastrointestinal symptoms which are found in all cases characteristic of benzol poisoning, also a reduction in resistance to infection. The antibodies apparently are not active as normal, and patients with subacute and acute benzol poisoning are very prone to sepsis. If this man had benzol poisoning the infected teeth were a starting point for sepsis. The uric acid excretion is not increased. According to some the leucocytes are really in the inside of the body, in the capillaries of the liver and the spleen. So we probably may not have abnormal leucocyte destruction in the beginning. After a time however in benzol poisoning the bone marrow itself produces abnormal cells and may become aplastic. Under such circumstances, especially in the presence of sepsis, it is possible that the bone marrow would make every effort to produce new cells. We found abnormal cells. We should probably find abnormal cells in different organs from the myelocytic series. The other symptoms are those of anemia and symptoms which may be present in chronic benzol poisoning wtih sepsis and secondary reaction on the part of the bone marrow.

A Student: Was there evidence that he had close contact with benzol?

Dr. Cabot: It is mentioned, but it does not say how close.

Dr. Jones: We went into his industrial history. He was a furniture polisher and had used benzol from time to time. None of the other men on the same job had any benzol poisoning symptomatically.

Dr. Cabot: It seems to me that that is an essential link in your chain. Benzol is a substance a good many people use and do not have any trouble with. You have to say that he is using more of it or in some way he gets more in his system than another person. It might be a special idiosyncrasy or sensitiveness, but that is rather dangerous ground, I think, to take.

The whole interest here is on what the marrow is going to show. I have gone on record and so has Dr. Jones that it will not show the type of marrow associated with pernicious anemia. Dr. Jones thinks it will show, on the contrary, some aplastic anemia. I do not feel so certain about that. I have not studied the case so much as he has. If it were a benzol poisoning it should show in the marrow chiefly loss and not increase of cells, but I should say that that is not probable. We ought to see increase of cells, on the whole of the myelocyte type, not of the lymphocyte type. If it was on the other hand a lymphoid leukemia, with the white count falling suddenly at the end of life, then the marrow ought to show increase of cells of the lymphoid type. These are the possibilities on the two sides. I think if I had to go without any more evidence than I have I should favor the last of these hypotheses.

CLINICAL DIAGNOSIS (from hospital record)

Leukemia, myeloid.

Stomatitis, ulcerative.

Splenectomy for aplastic anemia.

DR. RICHARD C. CABOT'S DIAGNOSIS

Lymphoid leukemia?

ANATOMICAL DIAGNOSIS

Aplastic anemia.

Atrophy of the bone marrow.

Dr. Mallory: The bone marrow was the only thing in the case that we were allowed to examine. Much to everyone's surprise it was an extremely atrophic bone marrow. In gross it was largely fatty, but with a slightly more gelatinous consistency than perfectly normal fatty marrow. It was not red, as it would be in pernicious anemia, and it was not white, as you would expect it to be in a leukemic process. Very few cells were present in the microscopic sections. Of the ones identifiable there were a considerable number of eosinophils, very few myelocytes, very few normoblasts and practically no megakaryocytes found. A great deal of the fat tissue was replaced with a very fine fibrillary network apparently at least resembling coagulation serum. The whole picture is fairly characteristic of what sometimes is called a serous atrophy of the bone marrow. So far as I know anything about benzol poisoning that is consistent with it, but by no means diagnostic.

Dr. Cabot: Between that and aplastic anemia is the general impression you get from the marrow?

Dr. Mallory: Yes.

Dr. Cabot: It seems to me that for practical purposes the importance of this case and the one last week is that they are not benefited by transfusions, and we cannot hope to do them any good through the feeding of liver.

A House Officer: This man was fed liver.

Dr. Cabot: I will read the pathological report on the spleen, which is the only other fact we have on his morbid anatomy. "Spleen 11x8x3.5 cm. On section firm, dark red, with normal follicles. Microscopic examination shows the natural structure obscured by a diffuse and dense infiltration by cells most of which seem to be of the nature of myeloblasts and erythroblasts. Some megakaryocytes and many cells containing blood pigment are present.—Myeloid hyperplasia."

Dr. Mallory: Dr. Wright also saw the bone marrow. We were unable to bring the two together at all.

Dr. Cabot: You can take your choice. It seems to me that for practical purposes the diagnosis of cases like this is now between (a) the intense anemia that will be benefited by liver, (b) intense anemias which we have no reason to suppose will be benefited by liver and (c) those benefited by splenectomy. This man had the benefit of both and did not get better.

A Student: Do you think the operation was justified?

Dr. Cabot: Here is a man on whom we know nothing definite, whose diagnosis in spite of a great deal of study cannot be settled, and we are willing to take any chance. Yes, perfectly justified.

Dr. Jones: He did not die from the splenectomy at all. He died from the disease.

A Student: How about the high color index? Is not that unusual?

Dr. Cabot: Yes. This whole case is unusual. Everything about it is unusual. I do not know that any of us will ever see a case just like it. But you can say certainly that it is unusual to have any high color index which is not pernicious anemia. I think it is well to remember that he did not have tongue symptoms, did not have jaundice and did have hydrochloric acid.

A Student: With the bone marrow picture given is it possible that that is lymphatic leukemia?

Dr. Cabot: No. I think that diagnosis is impossible in view of what Dr. Mallory has said.

A Student: Then what conclusion can you come to?

Dr. Cabot: That it can be explained as benzol poisoning or aplastic anemia of unknown cause, so far as the marrow goes. It seems to me that aplastic anemia is the best diagnosis. Is that what you think, Dr. Jones?

Dr. Jones: It is not idiopathic aplastic anemia of the usual type. It is very unusual. It is not the typical picture, with red cells simply small and pretty well shaped and lymphocytes and no abnormal white cells.

A Student: Is not the clinical picture quite typical of benzol poisoning?

Dr. Cabot: I should say an essential part of the clinical picture of that disease is the knowledge of an unusual absorption of benzol. That we have not got.

A Student: Is not the only thing against the poisoning the simple fact that you have not got that evidence? It does not exclude the diagnosis.

Dr. Cabot: No. I think anyone has a perfect right to believe it is that.

A Student: Are there other cases of benzol poisoning showing pictures like this?

Dr. Cabot: Not so far as I know.

Dr. Jones: Dr. Minot was given all the details of the case, and he thought it was not characteristic of benzol poisoning. That was before we had seen the marrow.

ARTIFICIAL PNEUMOTHORAX

F. D. VICKERS, M. D., Medical Director
Holy Cross Sanatorium, Deming, N. M.

Read before the New Mexico Medical Society, at its Forty-fifth Annual Meeting, at Carlsbad, N. M., May 9 to 11, 1927.

This talk is not for the doctor who is expert in giving pneumothorax—and there are many such experts in this part of the country—but for the general practitioner, who does not pay much attention to this method of treatment because he does not do it. Some years previous to the time I began giving pneumothorax, I was convinced of the value of lung compression by fluid in many cases, and especially in the case of a patient with bilateral pulmonary tuberculosis who came to New Mexico from Louisiana. He had been working to support a large family; had developed influenza, from which he was not able to recuperate; he grew gradually worse until he was in a dying condition from much trouble in both lungs—the neighbors were sitting up with him at night and I looked for crepe in the morning. He persisted in living and finally developed fluid in the left side which had the greater amount of trouble. As the fluid developed, he began to get better, to eat, and, to make a long story short, after staying in bed six months, he got out of bed and went back to Louisiana, lived several years and finally died as a result of an accident.

The principle involved in collapse of lung is to give rest to the lung—to squeeze the pus out of the lung and stop the secretions of pus and toxins, and put the lung at rest. If we have a joint with tuberculosis, we stop motion. If we have a lung with tuberculosis, we let it continue to breathe, with many movements per minute for twenty-four hours a day. If we can stop production and absorption of toxins we better the patient's general condition and thus better a not too active condition in the other lung, a laryngitis, or tuberculosis elsewhere. It is found possible to collapse one lung without any bad effect on the heart or on the circulation, and to continue that collapse without harm for an indefinite period.

While the general practitioner does not take a great amount of interest in pneumothorax treatment of tuberculosis, still he is the doctor who treats serous pleurisy, and

the treatment of this type of pleurisy will, in the future, be closely allied with the idea of lung compression, whether by fluid or by pneumothorax. Pleurisy with effusion of doubtful etiology, should be generally accepted as the result of tuberculosis of the lung, quite frequently not well enough developed to be recognized. It seems that particles of dust and bacteria that get into the lung by inhalation or by the blood stream and remain in the lung, settle at the periphery in the sub-divisions of the lungs, which are sub-pleural. When there is an allergic response and the bacteria are held in the pleural region, we can easily see the tendency to get pleurisy, even though the x-ray may not show much apparent parenchymatous infiltration. While the lymphatics of the bronchial arteries and the main venous trunks flow towards the hilum, the lymphatics about the veins just beneath the pleura connect with the pleural network of lymphatics and flow towards the pleura. Leukocytes engulf one or more of the bacilli, retain for a time their mobility and, when arrested in the capillaries, permeate the vessel walls by diapedesis, reach the lymphatic channels and, if not arrested there, are carried on by the current to the lymphatic glands. In history-taking of tubercular patients, it is common to get a history of pleurisy with fluid some years previously. Had the pleurisy been accepted as tuberculosis of the lungs and the patients been treated along this line at the time, many would have been prevented from breaking down later. The fluid was aspirated, and again aspirated, and early absorption sought; the lung was not compressed sufficiently long, and the follow-up treatment did not consider the cause—tuberculosis; hence, the patient was not cured.

The treatment in general practice up to recently was to aspirate to try to get rid of the fluid, and not to consider the cause. Now we aspirate only enough to relieve pressure, if that is neecssary, and leave the fluid to compress the lung as a treatment for the tuberculosis of the lung, which is the cause of pleurisy. And then comes the consideration whether it is not advisable to aspirate more or less of the fluid and replace by air, or possibly by oxygen, when it is advisable to compress the lung for a considerable length of time. If the fluid is left, adhesions begin to form at the top of the fluid, the fluid is pocketed and gradually absorbed, leaving adhesions in its wake —fluid does not surround the lung as does air, but the lung surrounds the fluid, forming adhesions and gradually absorbing the fluid. In cases of pneumothorax complicated with fluid, the fluid should be replaced more or less by air if we are desirous of keeping up the compression. We are coming to the time when, if it is considered advisable to aspirate fluid because the patient is not doing well on account of the absorption of too much toxin, or by reason of too much disturbance from pressure of the fluid, we will draw off more or less of this fluid, replacing it with air to a zero pressure and keeping up this pressure by air as long as we desire for the treatment of the underlying cause of pleurisy. And we will find ourselves considering the possibility of using pneumothorax in the dry pleurisy before fluid has formed and before too many adhesions have formed.

The following brief case summaries are given to illustrate some points in pneumothorax therapy:

Case 1. J. J., a young man; diagnosis of tuberculosis right lung, May, 1926; October, 1926, developed pleurisy with effusion left side; the supposition, of course, is that he had tuberculosis in left side; left fluid on left side in spite of fact that his more marked tuberculosis was in right side. Fluid quite well absorbed by February, 1927; having pleurisy, with pleurisy rubs, right side, March, 1927, and x-ray showed pleurisy with effusion berculosis of intestines. Had flare-up of temperature with fluid on right side; pressure so great that it disturbed him somewhat and we drew off little fluid to relieve this pressure. Now we would hesitate in case like this to give pneumothorax, yet we treat both sides by leaving fluid, which is equivalent to pneumothorax, and patient does all right. I believe, if this fluid were partially drawn from right side and replaced by air so that we can keep up compression as much as we like or as little as we like, it would be better than leaving it to chance of having fluid pocketed and absorbed, perhaps before we want it absorbed.

When the commonly accepted method of treatment by rest, fresh air, good food and general management, fails, and the patient is doing badly, then think of pneumothorax.

Pneumothorax has not had a fair trial because it has much too generally been given as a last resort—too late. In cases where the lesions are largely one-sided and are not doing well, pneumothorax should be tried fairly early.

Case 2. S. U., young woman; when she came to sanatorium had some activity with tendency to small hemorrhages occasionally; put to bed for few months, but did not improve; was given pneumothorax; later turned over to my predecessor, who kept up pneumothorax for two years, and who had these x-rays taken. Fig. 1 illustrates very nicely how, in early cases before we get adhesions, it is possible to get perfect compression. Fig 2 illustrates the necessity of using x-ray to guide us in such cases—with no adhesions and with a flexible mediastinum, how easy it is to push everything over into the other side. These two pictures were taken August, 1923; pneumothorax was kept up for about two years, and Fig. 3 shows the condition in August, 1926, with lung fully expanded.

Case 3. Mrs. H. H. B., age 27; first diagnosis March, 1924; admitted to sanatorium November, 1925; had previous sanatorium care; rales in base of right lung; although an ideal patient, the trouble did not clear up and, January, 1926, began pneumothorax; got out of bed in April, 1926, returned to home in western Texas; up and about, and the last I heard of her, she was riding by stage 250 miles for re-fills.

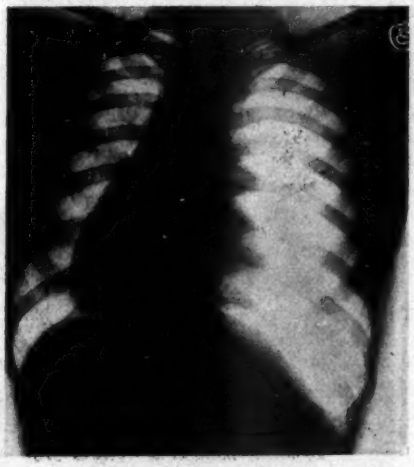

Fig 1: Case 1. showing the ideal compression obtainable where there are no adhesions.

It is not necessary that a case should have lesions in only one lung. If one lung has lesions that are not too active—as usually the trouble will start in the right lung and this lung, while showing lesions becomes resistant, more or less quiescent, and is not poisoning the patient—the infection goes on to the other lung and runs away.

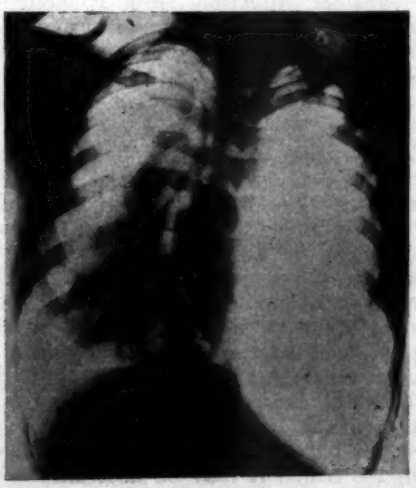

Fig. 2: Case 1, showing excess pressure displacing mediastinum. These structures readily returned to normal position, as part of the air was absorbed.

Case 4. Mrs. A. S., age 28; first diagnosis fall of 1925; entered sanatorium May, 1926; in bed six weeks; running temperature, losing weight, no prospects of doing any good; pneumothorax given; compressing left lung (Fig. 4); from time of first treatment to present she gained 58 pounds; pulse slowed down, slight temperatures occasionally, still coughs and raises some.

The treatment of advanced tuberculosis

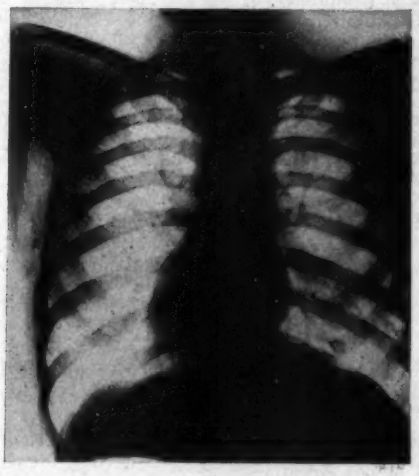

Fig. 3: Case 1, one year after the expansion of the lung.

is not free from danger by any method; we may get hemorrhages and spontaneous pneumothorax in our "watchful-waiting" rest method, and not infrequently hemorrhages cannot be controlled by any method except by pneumothorax.

Case 5. H. D., young man; had been sick a number of years with tuberculosis; up and about all the time; not running much temperature; had repeated hemorrhages and I gave him pneumothorax to control bleeding; he lived three and a

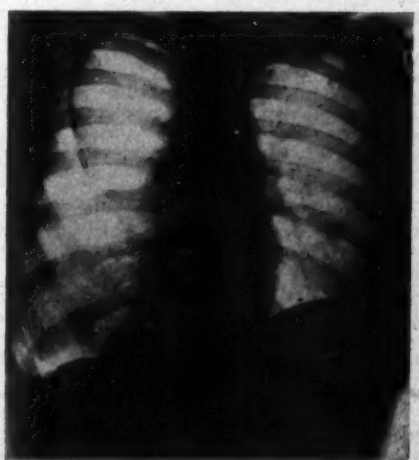

Fig. 4: Case 4, showing left lung under partial compression.

half years, working all the time—he was Justice ofthe Peace and an insurance agent; died of fibrosis in opposite lung; before death did not run temperature and did not cough nor raise much.

Case 6. L. H., age 31; diagnosis April, 1926; two hemorrhages before coming to sanatorium; arrived sanatorium May 28, 1926; May 29 had hemorrhage of pint, and started pneumothorax; gave him 1,000 c.c.'s first day in divided doses; June 4, 500 c.c.'s; June 5, hemorhage of one-half pint; June 6, 500 c. co's, same day hemorrhage of one-half pint; June 7, 500 c.c.'s, hemorrhage same day of more than pint; June 9, hemorrhage 23 oz., gave him 400 c. c.'s, after which he had no more hemorrhage. He bled 23 oz., after having 2,900 c. c.'s of air; he bled, altogether, 7 pints. Continued pneumothorax until he returned to his home in Indiana, August, 1926, saying he would rather live one year there than ten years in New Mexico.

Fig 5: Case 8, showing extensive fibro-cavernous involvement of the left lung.

Spontaneous pneumothorax is much more common than is generally supposed.

Case 7. W. M., age 33, ex-service man; first diagnosis, 1918; chronic case; refused further hospitalization; had pneumothorax treatment left side some years previous to time I first saw him; a week or so before entering sanatorium, he had abscess of lung empty out; came to sanatorium on account of very severe dyspnea. I found spontaneous pneumothorax on left side, which was side on which he had his previous pneumothorax treatments; in few days he developed acute trouble on opposite side and died.

Considering the dangers of pneumothorax, spontaneous pneumothorax may complicate our pneumothorax cases.

Case 8. P. M. O., middle aged man; ten years ago came to this country for tuberculosis; supposed to have been arrested; entered sanatorium when he came to the place where he could go no further; was running temperature 103 to 104, coughed, raised three boxes of sputum every day; rapid pulse. As may be seen from x-ray (Fig. 5) there was no chance of recovery by ordinary treatment; I told him his only chance was in having lung collapsed; found pleural space and gave 300 c.c.'s which was not followed by any reaction or pain; some twelve hours later he was taken with very severe dyspnea caused by spontaneous pneumothorax. The x-ray showed fluid and the aspirated fluid contained streptococci and tubercle bacilli; an abscess formed in the needle puncture; at the second aspiration in a few days, the pus was too thick to aspirate; put in tube and x-ray (Fig. 6) shows the lung partially recovered from compression, opening up cavities in upper part of lung from which he is raising two boxes of sputum a day, running temperature 102, with no prospects of getting better. There was a time when this lung could have been collapsed safely.

We naturally think of infection from without, but with skin-puncture with knife so as not to carry infection from the skin, with filtered air that has stood over antiseptic fluid, and with aseptic care, I do

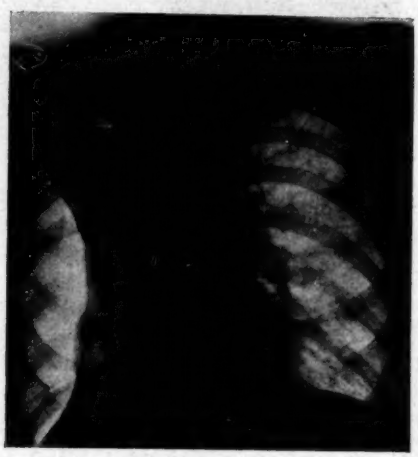

Fig. 6: Case 8, showing lung partly expanded, after having once been collapsed, over the upper portion. Tube has been inserted for empyema drainage after infection following spontaneous pneumothorax. Patient died in June ,1927.

not consider infection from without. But there is some danger of infection from within, as adhesions pulling open infected places in the lung may cause infection of the pleural space with tubercular or mixed infection.

Complication of fluid happens very often and, should a large amount of fluid form, I believe it should be aspirated and replaced by air; if the fluid is turbulent, aspirate and replace by air.

In regard to pleural shock: I use novocain and adrenalin, with a small needle, blocked down to, and including, the pleura, and while I have had no experience with pleural shock, I would not say there is no such thing. Pain is frequent after the first treatment, as the separation of slightly adhering pleural surfaces may cause severe pain, for which it may be necessary to give a narcotic.

Some years ago a man about thirty-five years of age, with chronic tuberculosis of

both lungs, came to the local hospital with influenza. While there, he had a bad hemorrhage and I gave him pneumothorax to control the bleeding. He improved and left the hospital, and was continuing the pneumothorax treatments while up and about. He had some leak of air and, while I gave him the treatment a good many times, on one particular occasion upon introducing the needle and turning on the manometer I got oscillation but did not study it carefully enough, and I was not checking him up with x-ray—as I had done it many times before I did not pay much attention and turned on the air. He almost immediately began to complain and I turned the manometer off. He developed paralysis up one side of his body and a spasmodic condition of the opposite side; lost consciousness for a few minutes, but soon began to improve. Next day he was all right except for a slight weakness on the side that had been paralyzed. This is the only experience I ever had with air embolism and I am giving you a little description of it because very few have seen air embolism cases. I am sure it was caused by introducing the needle into the lung; we can also conceive that it would be possible to open a blood vessel in the lung by adhesions pulling loose from the lung under air pressure.

Some cases leak air—the air under pressure from coughing being forced through the valve opening in the lung, which does not allow the air to escape back into the pleural cavity.

ILLUSTRATIONS 25, 26 and 27; M. B., young woman; had tuberculosis for some time; had been better and worse; had stopped work and came to sanatorium to rest up for time. X-ray shows cavity in upper part of right lung; she did no good under sanatorium treatment for some months; left account financial condition; in town walking about and boarding herself, running temperature 102-103, coughing and raising. Gave her pneumothorax January, 1927; from January to March she had 3,000 c. c.'s; physical examination, March, would lead one to believe she did not have much air in pleural cavity; manometer gave very slight oscillation upon introduction of needle; x-ray shows no air in pleural cavity except at top of lung; cough has ceased and she raises practically no sputum; no fever; the cavity shows compression; introduced needle under clavicle, got oscillation of manometer; gave her 400 c. c.'s; in three weeks, needle introduced same place, got very slight oscillation and she took only a small amount of air.

Pneumothorax does not rank very high because it is used in too many cases that are incurable.

ILLUSTRATIONS 28 and 29: W. B., age 21; in our extreme desire to do some good for one who isn't doing well, we gave this boy pneumothorax; he was running temperature, had rapid pulse, and there was no prospect of his doing any better under the "watchful-waiting" treatment; he developed appendicitis following the pneumothorax; was operated on under local anesthesia; found patch on colon suspicious of tuberculosis; recovered from operation perfectly, having no signs of abdominal tuberculosis; now he is running scarcely any temperature, pulse not rapid, coughing and raising some. While we cannot promise that he will make a cure, he does show considerable improvement.

DISCUSSION

DR. CARL MULKY, Albuquerque, (opening): I haven't much to add to Dr. Vickers's paper, as he has covered the ground very thoroughly.

Pneumothorax treatment has been well established since 1910 in this country and it has spread until now it is a standard form of treatment in certain classes of cases. At first pneumothorax was usually tried on advanced, hopeless cases, but gradually, year by year, it is being given earlier and the results are improving. It used to be that it was given as a sort of last resort; when it was felt that something had to be done and there was nothing else to do—then pneumothorax was given. Some good results were obtained, so there has been a gradual increase in its use. The only thing that I would suggest in artificial pneumothorax is that it be given as early as possible. In such cases the results are usually good.

DR. H. H. LATSON, Amarillo, Texas: I have not had much experience with pneumothorax and have no discussion to make of the Doctor's very able paper. I do recall, however, the instance of a morphine addict in our country not long ago, who was working our physicians by taking a medicine dropper and injecting air directly into his veins.

DR. FELIX P. MILLER, (El Paso): I enjoyed Dr. Vickers's paper very much and am sorry that I was not here to hear the first part of it. There is no doubt in my mind as to the value of artificial pneumothorax. It has done a wonderful amount of good for patients in early cases, and has also done a great deal of good in a number of old cases, practically hopeless otherwise.

It is well known that the air negative pressure has a selective influence over the pathological lesion. If you wish positive pressure to the degree Dr. Vickers showed us in one case, undoubtedly you can displace the viscera and cause a great deal of inconvenience to the patient. The same reason Dr. Mulky gave for the use of pneumothorax in the early cases, applies to everything done for the tuberculous individual. The earlier the disease is recognized and the sooner the treatment advocated (and most of us advise abundant rest), the better the chances for recovery. During this period, the patient has every advantage to supplement rest in bed with hygienic measures and food that is being given him in order to raise his resistance to a point where we can speak of him as an arrested case.

Dr. Vickers showed a number of cases well adapted to the use of this treatment and a few which he himself knew were what we speak of as a long chance in endeavoring to do something for the patient, when the case otherwise looked hopeless.

A number of the cases that have come to grief in my experience are those in which there are adhesions near the apex and it requires such a pressure of air to collapse the base and also to make a pressure upon these adhesions that, in the zeal to compress these, pressure is increased to such a point that rupture of the lung tissue is produced. It is in these cases that I have seen the most trouble from the resulting fluid and empyema. In some cases we can inject a small amount of air and get

to the apex above the adhesions and so compress the activity; then there will be less danger.

My work deals largely with cases that have had pneumothorax and the lesion becomes active again and the pleura is adherent; then pneumothorax is forever barred and we must have surgical compression by means of a thoracoplasty.

DR. VICKERS (closing): I have nothing to add except to thank you for the discussion.

USE OF IODIZED OIL IN DIAGNOSIS AND TREATMENT OF BRONCHIAL AFFECTIONS

STUART PRITCHARD, M. D.
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Read before the Annual Meeting of the New Mexico Medical Society held at Albuquerque, N. M., May 19-21, 1926.

Iodized oil is used as an opaque medium in the roentgenographic study of body cavities. It was first employed by Sicard and Forestier in 1921 as an aid in locating and demonstrating obstructions of the spinal canal, and later was used successfully by the originators in exploring dilatations, fistulous tracts and cavities of the bronchial tree and the pulmonary tissues.

Since October, 1924, we have employed iodized oil in the form of bronchial injections as a diagnostic and therapeutic agent. This article is based on the results of this study and also the writings of Sicard and Forestier, Sergent and Cottenot, Nigoul-Foussal, Ballon, Archibald and others.

The iodized oil we have employed is the chemical compound of 40 per cent metallic iodine with oil of poppy seeds described and used by Forestier. The oil and iodine are so closely combined that the ordinary starch fails to reveal free iodine.

Iodized oil is of clear amber color, is neutral in reaction, has a specific gravity of 1.350, and is insoluble in water or alcohol. The iodine may be liberated by the alkaline carbonates of the saliva and intestinal secretions, but is not affected by the gastric acidity. It becomes brown when exposed to the action of light, air, humidity and high temperature, because of the liberation of iodine. The high iodine content of the compound renders it opaque to the roentgen rays. The value of the oil as a diagnostic agent is due to its resistance to the roentgen ray and to its tolerance by the bronchial mucous membrane. The therapeutic advantages are due to the slow rate of absorption of the contained iodine without harmful effect on the patient. Iodism does not occur unless the oil is swallowed and subjected to the action of the intestinal secretions. The slow liberation of iodine prevents the danger of pulmonary congestion, which sometimes follows the use of iodides. It must not be used, however, when brown, on account of the caustic effect of free iodine.

There are four methods of introducing iodized oil into the bronchial tree: namely, the supraglottic, the transglottic, the subglottic and the bronchoscopic. In the first and second procedures, a curved cannula is used. In the subglottic method, a hollow curved needle is passed through the cricothyroid membrane into the trachea, while in the fourth the oil is introduced through the bronchoscope.

The following general principles should be observed in all methods:

1. The use of discolored oil should be avoided.

2. Warm oil should be used, as it flows more freely and lessens the tendency toward cough.

3. Solutions for anesthesia should be warmed.

4. Roentgenographic exposures should be made as soon after injection as possible, and cough should be prevented by any unnecessary movements of the patient.

METHODS OF INTRODUCTION

Supraglottic.—In some patients the injection can be made without local anesthesia, but a better procedure is to swab the pharynx, soft palate (velum) and the base of the tongue with 5 per cent. cocaine solution. After an interval of three minutes, 1 c.c. of warmed 2 per cent. cocaine solution should be dropped into the glottis with the aid of a laryngeal mirror, syringe and curved cannula. Five minutes later the injection can be made. The patient sits facing the operator and slightly inclined toward the side to be injected, and is instructed to pull the tongue forward and breathe normally throughout this stage of the operation. A 20 c. c. syringe filled with warmed iodized oil is firmly attached to a 6 inch cannula having its distal end curved to a right angle or less. With the aid of a laryngeal mirror, the tip of the cannula is introduced behind the base of the tongue held over the glottis, and the oil is slowly expelled from the syringe into the larynx. We have found that it is best to give no instructions to the patient regarding the manner of breathing, except in case of threatened cough, when a deep inspiration is advised.

Transglottic.—This method of injection is made with the tip of the cannula passed through the glottis into the trachea. The

pharynx, velum and base of the tongue are anesthetized as in the supraglottic method, but for the larynx and trachea the quantity of 2 per cent cocaine is increased to 1 to 3 c. c., on account of the deeper degree of anesthesia required.

Subglottic.—In this method, devised by Rosenthal, any difficulty in passing the larynx is avoided, and the oil is injected directly into the trachea. After anesthesia of the skin and subjacent tissue, a hollow curved needle attached to a metal guard is pushed through the cricothyroid membrane and into the lumen of the trachea. The position of the needle should be verified by attaching a syringe and aspirating, the withdrawal of air or mucus showing the needle to be in the trachea. From 1 to 2 c. c. of warmed 1 per cent cocaine solution is then slowly injected through the needle, in order to anesthetize the mucosa of the trachea and bronchi of the desired area. The patient may cough for a short time. After from three to five minutes the iodized oil should be injected by means of a metal syringe firmly connected with the needle by a piece of strong rubber tubing. The tubing allows a certain motility of the syringe and must be strong to withstand the pressure necessary to force the oil through the needle.

POSITION OF PATIENT

The patient's position during injection is important as the distribution of the oil is determined by gravitation and the aspirating power of the lung. If one observes the progress of the oil on a fluoroscopic screen during injection, the greater portion may be seen to follow the most dependent bronchial trunks. For this reason the inferior lobes are most easily injected with the patient sitting. The oil is directed to the right or left bronchus by inclining the patient slightly in a corresponding direction during the injection. The middle and upper lobes can be injected only when the patient is lying, and with this position the supraglottic method is still effective, but the transglottic, the subglottic and the bronchoscopic may be used. To fill the apical bronchi, the patient should be placed on a tilting table with the desired side downward. A few seconds after the injection, the head of the table is lowered for a minute to permit the oil to flow into the upper lobe.

A useful exploration requires from 10 to 20 c.c. of oil, and in the presence of large bronchial dilatations the lung will accept 40 c. c. without evidence of distress. When injecting more than 20 c. c. of oil, the transglottic, subglottic or bronchoscopic method is preferable.

COMMENT ON METHODS

In the application of any method, the patient should be told what is being attempted, and assurance given. In this way cooperation is obtained, time is saved, less anesthesia is used, and better results are accomplished.

The supraglottic method without anesthesia will seldom be successful with patients who are apprehensive or in whom the larynx and trachea are irritable from previous cough of long standing. Even with anesthesia, it is rejected by Forestier[7] as being rarely satisfactory. On the other hand, it is upheld by Claisse and Caussade.[8] In our experience, the supraglottic method with local anesthesia has been successful in the great majority of cases, and in the absence of unusual laryngeal irritability it is always tried first. The method, however, is more satisfactory in the injection of areas lying at or below the level of the lung roots, as the oil follows the path of least resistance.

Prior to the bronchial injection, the patient should have a physical examination of the chest and a roentgenologic study. When the examination is repeated after the injection, considerable information may be obtained regarding bronchial irregularities, the size, shape and position of the trachea, and a detailed knowledge of the contents of the lung root zone not revealed by any other diagnostic procedure. The roentgen-ray study should include oblique stereoroentgenograms in addition to the ordinary posteroanterior exposures. The trachea and its bifurcation are thereby clearly outlined, and images which otherwise would remain obscured by the cardiac and diaphragmatic densities are definitely exposed.

It is necessary to make the postoperative roentgen-ray study immediately following the injection, with as little disturbance of the patient as possible, for the reason that with the return of the cough reflex the larger bronchi may become partially emptied and valuable information be lost. Hence, in a patient showing unusual irritability of the trachea, it may be necessary to abandon the technic and make both the injection and the exposures on the roentgen-ray table.

The practitioner intending to use iodized oil in the diagnosis of pathologic conditions of the lungs should first practice injections in normal subjects, and so learn to recognize the shadows characteristic of all parts of the uninjured bronchial tree.

In the normal (fig. 1), the trachea and the large bronchi are shown in outline by the oil, which clings to their walls, but the smaller bronchi appear as continuous solid

lines, which diminish in width as they approach the thoracic wall. Surrounding the bronchi, the filled alveoli are represented by a coarse stippling. After the patient has coughed, the hitherto unbroken line of the bronchial shadow becomes interrupted, but the alveolar shadows remain. This broken bronchial line can also be caused by the use of an insufficient quantity of oil. The alveolar shadows remain unchanged for about twenty-four hours and then gradually disappear during the ensuing ten days. Forestier[3] says that the urinary elimination of iodine passes its maximum after the third day but persists to the amount of several milligrams daily, as long as there are pulmonary shadows.

PATHOLOGIC PICTURE

The sharply defined outline of the trachea and its bifurcating branches enables one easily to recognize the exact site of conditions such as deviation or compression. It is unwise to dismiss the possibility of an anteroposterior compression of the trachea without the study of films taken in the oblique or lateral position (fig. 1).

Iodized oil, however, finds its greatest usefulness in the visualizing of bronchial dilatations and particularly in those earlier cases wherein cough is the chief or only symptom, and both physical examination and the roentgen ray fail to locate the focus. After injection, these early dilatations are shown as small, pouch-like shadows. Those of longer standing (more advanced) may be cylindric or may resemble a hanging bunch of grapes (fig. 2), drops of tar or even the fingers of a glove, as described by Sergent and Cottenot.[4] These abnormal shadows stand out in excellent contrast with the regular and more delicate outlines of the surrounding normal area.

The presence of fragmented bronchial lines in films made before the patient begins to cough may be considered as evidence of the presence of abnormal bronchial secretions, provided one can exclude an insufficient quantity of oil as a cause.

It is evident, then, that any pulmonary cavity can be shown roentgenographically if its bronchial outlet allows the inflow of iodized oil. We have not found occasion for injecting a tuberculous pulmonary cavity, but we have succeeded in locating the cavity of a foregin body abscess which, on the regular film, remained hidden (fig. 3). This fact suggests that this procedure with serial oblique films might be a valuable aid in thoracic surgery. In the exploration of thoracic fistulas, the fluidity of iodized oil renders it superior to bismuth paste. Archibald[5] has drawn attention to the value of this oil in demonstrating the persistence of tuberculous cavities and bronchial dilatations after thoracoplastic operations.

We find the injection of iodized oil of great value in patients presenting symptoms of persistent cough, occasional fever and expectoration free from acid-fast bacilli. These patients complain of exhaustion and are underweight. Their cases are frequently diagnosed as tuberculosis, and the physical examination, laboratory findings, and roentgenologic study give no definite information as to etiology. The following cases will illustrate the point:

M. C., a man, aged 36, 5 feet 6 inches (168 cm.) tall, weighing 131 pounds (59 Kg.), with an average weight of 140 pounds (64 Kg.), was pale, was nervous, and tired easily. A chronic cough persisted for eight years, following influenza. The expectoration was scanty and revealed no acid-fast bacilli or elastic tissue. At times the cough was increased in severity, and some slight degree of fever was present. The patient complained of a heavy dull pain under the middle of the sternum. He had been told that he had tuberculosis. After a careful physical examination, laboratory test and roentgen-ray study of the chest no abnormalities were found, except rhonchi over the right lung root zone in the back. Iodized oil was injected into the right root and base, and a distinct bronchiectatic dilatation (fig. 2) was shown at the edge of the right lung root density. The patient was given an injection of 10 c. c., once a week for six weeks and, eight months later, he reported that since then he had had no cough or expectoration and felt well. The supraglottic method was used, and no local anesthesia was administered after the first injection.

M. K., a woman, aged 52, had had chronic cough, associated with about 10 to 20 c. c. of purulent but odorless expectoration daily, following an acute bronchitis five years previously. No acid-fast bacilli or elastic tissue was found (pig inoculation). There was no clubbing of the fingers, no loss of weight or history of fever. The patient complained of fatigue and of the annoying cough and expectoration. Physical examination and roentgenologic studies of the chest showed no abnormalities, except that the right root shadows were somewhat prominent. The nose and throat were normal. Twenty c. c. of iodized oil was injected into the right lung root zone by the supraglottic method. A very distinct irregular bronchiectatic dilatation (fig. 4) was revealed in the inner right lung root zone, over which grouped rales were found, the result of the retention of the oil. This area was in all probability the seat of the bronchial affection; lack of drainage caused a persistent multiplication and accumulation of bacteria. Fourteen injections of 12 c. c. of iodized oil were given this patient at intervals of not less than five days, the object in treatment being completely to fill the small bronchial dilatations. Five months after the last injection, the patient reported much less expectoration and only a slight cough.

M. P., a woman, aged 36, had had a cough since she was 18 years of age, following a severe attack of acute bronchitis. For the past twelve years, the cough had been loose, productive and became worse on lying down. The sputum was yellow, offensive and from 30 to 40 c. c. in quantity daily; no acid fast bacilli or elastic tissue was found (pig inoculation). The fingers were definitely clubbed. The

nutrition was good. There were occasional attacks of fever. For the past three years, the condition had been growing worse. Scattered rhonchi were heard on physical examination of the chest. Anterior and oblique stereoroentgenograms showed no abnormal densities. The nose and throat were normal. Fifteen c. c. of oil was injected into the right lung root and descending bronchial tree, with no signs of dilatation. Later, the left root and descending bronchial areas were injected, and a number of cylindric bronchial dilatations were found (fig. 5). Sixteen injections of 10 c. c. each were given over a period of eleven weeks. Four months after treatment, the patient showed a marked improvement. The sputum had greatly decreased in amount and was odorless. A slight cough remained, but the patient reported that she has never felt so well in years.

CONCLUSIONS

1. By the injections of iodized oil into the bronchial tree, small bronchiectatic dilatations in and around the roots of the lungs and cylindric fusiform enlargements of the descending branches may be revealed in many cases of chronic cough, which a previous exhaustive examination of the chest failed to show.

2. The entire bronchial tree cannot be visualized at one injection. Small sections should be injected at intervals until any abnormality is discovered or the entire field is studied.

3. The nose and throat should be studied in all cases. Bronchiectatic cavities occur as the result of chronic upper respiratory infections, and may continue to cause cough after the tonsils are removed or the sinuses drained.

4. In the majority of cases, we feel that the supraglottic method of injecting the lung roots and descending branches of the bronchial tree takes less time, less anesthesia, is less worry to the patient and gives results quite as satisfactory as other methods.

5. It is not necessary to use extensive local anesthesia in the majority of cases.

6. In more than 600 bronchial injections of iodized oil, we have seen no ill effects in our patients. No cases of iodism occurred.

7. The technic is not difficult. It requires no special training.

8. Negative results of an injection are no diagnostic proof that bronchiectatic dilatations do not exist.

9. The therapeutic use of iodine is not new but this compound of iodized oil is a new combination and, as a result of the slow liberation of the iodine in the bronchial tree, acts as an ideal treatment in chronic affections of the lower respiratory tract.

10. In acute affections, we hesitate to inject iodized oil for either diagnostic or therapeutic purposes.

11. Iodized oil should not be injected in cases of advanced suppurative condition.

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TUBERCULOSIS OF THE SKIN

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Read before the Cochise County, Arizona, and the El Paso County Medical Societies.

The subject of tuberculosis of the skin is a large one, and the literature covering it is extensive. Much of this literature, particularly that dealing with the less known types of lesions, is contradictory and confusing to the practitioner who is seeking aid in diagnosing these lesions. It was thought that an outline of the modern conception of tuberculous disease of the skin, and a brief description of the various lesions might be of value in clarifying the subject in the mind of the non-dermatologic practitioner who seeks more light in this field of dermatology.

Certain lesions of the skin—such as lupus vulgaris, tuberculosis verrucosa cutis, scrofuloderma, tuberculous ulcers, postexanthematic miliary tuberculosis of the skin, and the disseminated miliary lupus of the face—are well known to be caused by an infection of the skin by the tubercle bacillus, resulting in the characteristic reaction to tuberculous infection elsewhere; namely, tubercle formation.

There are several other conditions which are considered to be tuberculous in origin, but which are variously explained as being caused by:

1. Toxins of the tubercle bacillus;

2. Metastases of small numbers of tubercle bacilli in a skin previously highly sensitized by an active or latent tuberculous process elsewhere;

3. True active infection by the tubercle bacillus.

Such diseases are: erythema induratum, the papulonecrotic tuberculids, lichen scrofulosorum, and the subcutaneous variety of sarcoid tumor. The histopathology of the

lesions of this group as reported by various observers varies from a simple inflammatory reaction to one approximating typical tubercle formation. Tubercle bacilli have at times been found in sections from all these diseases. It is now held by most students of the subject that these lesions are caused by the reaction of a highly sensitized skin to the invasion of small numbers of tubercle bacilli, this reaction more or less completely destroying the organisms.

There is still a third group of diseases which have been suspected of a tuberculous etiology. Prominent among these are lupus erythematosus and certain chronic exfoliating dermatoses. There is at present no proof of their tuberculous origin.

Sensitization plays an important part in the production of the skin lesions of tuberculosis. That sensitization of the skin occurs is evidenced by the positive tuberculin test present in nearly all these cases. In advanced general tuberculosis, and for a time following measles, the resistance is lowered, and the phenomena of sensitization are absent. Such a period following measles is apt to be followed by the appearance of multiple tubercles in the skin. In these cases of broken down resistance there is no reaction of the skin to the tubercle bacillus, and an active tuberculous infection occurs, not a tuberculid in which the bacilli are killed. More evidence of the sensitization of the skin is found in the fact that lupus vulgaris lesions temporarily flare up after the application of Moro's tuberculin ointment.

The diagnosis of tuberculous skin lesions is of special value in calling attention to a tuberculous process elsewhere. A tuberculid eruption in young children is sometimes the first noticeable symptom of a grave tuberculous infection. Other tuberculous lesions, particularly erythema induratum, are not infrequently found in robust and apparently healthy individuals, and their diagnosis is of value in directing attention to a latent, or possibly active, infection in the chest or elsewhere.

Fig. 1

Lupus vulgaris, (Fig. 1) the best known, and probably the most common skin lesion of tuberculosis, occurs as groups of brownish nodules of soft consistency which ulcerate and heal with considerable scarring and resultant deformity. There are often recurrences in the old scars, and these scars are also sometimes the base for future epitheliomata. Lupus vulgaris is analogous to, and closely resembles, the serpiginous lesion of tertiary syphilis. The chief points of differentiation are the softer character of the tuberculous nodules, and the recurrences so often present in the scars.

Fig. 2

Scrofuloderma, (Fig. 2) si an infection of the skin by continuity from tuberculous lesions of glands or bones. The common site is over the glands of the neck. The lesion is a firm infiltration which finally ulcerates. The large glands, when present, suggest the diagnosis.

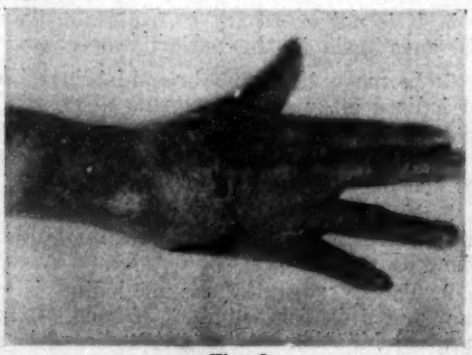

Fig. 3

Tuberculosis verrucosa cutis (Fig. 3) differs from lupus vulgaris in the thick warty surface. This type of tuberculosis is caused

by direct inoculation of the skin, as sometimes occurs from infected postmortem material. The lesions closely resemble blastomycosis. The latter is distinguished, however, by the miliary abscesses and by the presence of blastomycetes in the pus from them.

Tuberculous ulcers usually occur about the orifices and indicate an advanced internal tuberculous process. These ulcers are characteristically painless and have undermined edges.

As previously mentioned, following measles there is often an outbreak of disseminated miliary tubercles in the skin. This is a grave and sometimes fatal manifestation of general tuberculosis. This acute postexanthematic outbreak is to be distinguished from the chronic disseminated miliary lupus of the face, which is a benign dermatosis.

The dermatoses just described constitute the known true tuberculous infections of the skin. The following are the so-called "paratuberculoses" or "tuberculids".

Erythema induratum (Fig. 4) is characterized by exceedingly chronic, deep, violaceous infiltrations situated, by predilection, on the calves of the legs, occasionally on the forearms. There is a tendency to ulceration, and healing is very slow. Except for the fact that they are multiple and symmetrical, they resemble gummata.

The papulonecrotic tuberculids are indolent papular eruptions, the papules, as the name signifies, becoming necrotic in the center and healing with resultant depressed scars or pits. There are two varieties of this eruption, acnitis having a predilection for the face, and folliclis favoring the extensor surfaces of the arms and legs. The lesions are essentially the same.

Lichen scrofulosorum is an eruption of very small scaly papules occurring in groups, usually on the sides of the trunk. These lesions are less resistant to treatment than the other tuberculous conditions, and, being rather superficial, they do not leave appreciable scars.

Fig. 4

The subcutaneous sarcoid tumors are considered tuberculous. They are sharply circumscribed infiltrations somewhat resembling the lesions of erythema induratum.

In the treatment of both the true tuberculous infections and the tuberculids, general measures—such as sunshine, rest, fresh air, and a liberal nutritious diet—are important. Tuberculin is often of benefit. General actinotherapy, from the sun or from artificial sources, is sometimes helpful, as in tuberculosis elsewhere. The intravenous injection of gold solutions has been used with beneficial results, but this form of therapy has not been sufficiently used to judge its true value at this time. In erythema induratum, papulonecrotic tuberculid, and sarcoid persistent arsenical therapy, particularly in the form of arsphenamin, is some times beneficial. Codliver oil is of value as in other forms of tuberculosis.

In most of these diseases the local treatment is even more important than the general measures. In lupus vulgaris, tuberculosis verrucosa cutis, and scrofuloderma, subintensive x-ray therapy is of great value. Small lesions of lupus vulgaris and tuberculosis verrucosa cutis are, in my experience, best destroyed by electro-dessication. This might well be used on larger areas when located where the scar would not be objectionable. Solid carbon dioxide can also be used to advantage in these conditions. Their treatment by the Kromayer lamp is an almost endless task.

In erythema induratum, subintensive filtered x-ray therapy is the local treatment par excellence, and has given gratifying results in my experience in those cases in which treatment has been persistent.

X-ray in small doses is beneficial in the papulonecrotic tuberculids.

As in all other forms of tuberculosis, so in tuberculous diseases of the skin, treatment, to be effective, must be persisted in. After the lesions heal, recurrences are not uncommon, just as in tuberculosis of other structures. It should be remembered that, when tuberculosis is found in one structure of the body, it is not unlikely that other structures also are involved, and the finding of these tuberculous skin lesions should be made the most of, in our fight against tuberculosis, in "rounding up" cases with unsuspected pulmonary and glandular involvement.

CLIMATIC TREATMENT OF TUBERCULOSIS: A PLEA FOR A TUBERCULOSIS SURVEY.

M. POLLAK, M. D.
Fort Bayard, New Mexico

Read before the Forty-fifth Annual Meeting of the New Mexico Medical Society held at Carlsbad, N. M., May 9 to 11, 1927.

Our progress in the treatment of tuberculosis has been gained mainly by empirical observations. The observations made by all physicians dealing with the question, are accepted as fundaments in phthisiotherapy. Today no phthisiologist would deny that rest, good food and fresh air are essential in the treatment of tuberculosis. As a matter of fact, however great and varied our armamentarium in the treatment of tuberculosis may be, our therapy is always based on these fundamental factors.

It is obvious, however, that, besides these essential factors, there are also a number of others which play a great part in the cure of tuberculosis. The application and evaluation of these other means—such as artificial pneumothorax, thoracoplasty, climatical and other treatments—will greatly depend upon the personal experience of the individual doctor.

We, the doctors of the Southwest, lay a great and, it is my firm belief, just emphasis on the role the wonderful climate of the Southwest plays in the treatment of tuberculosis. The Southwest boasts that its climate is most ideal for the treatment of tuberculosis. It points with just pride to the fact that its cities were built, its industries are developed and its soil tilled to a large extent by tuberculars who came here seeking their health. These tuberculars were cured here in the physiological or, at least, in the practical sense of the term.

We cannot deny that tuberculosis, with proper care, is curable or, at least, amenable to treatment under various climatic conditions. But it should be borne in mind that the sending of a member of a family to a great distance for a prolonged cure, may mean financial disaster and the breaking up of the afflicted family. It is no wonder, therefore, that, as long as there is such a distinct disagreement among the medical profession as there is, in the question of climatic treatment of tuberculosis, many medical advisors will hesitate to advise climatic treatment for their patients before exhausting all the therapeutical means at their command. So it happens that patients are either advised against climatic treatment, or sent to a resort when in a condition already beyond all hope. According to E. A. Sweet's[1] statistics, among the out-of-state tuberculars who died in the decade from 1904 to 1913 in Albuquerque, New Mexico, 57.8 per cent died within a year of their arrival. Among these deaths 15.6 per cent occurred within thirty days, and 30.9 per cent within six months, after arrival.

It was said in the controversy concerning climate—and this statement is often repeated—"that the difference in opinion is largely limited by geographical lines, i. e., the great majority of propagandists of certain climates are residents in those climates." This statement is true, but, scrutinizing it, we find that the larger percentage of these "propagandists" were converted to their conviction after they themselves had broken down with tuberculosis and, after having tried all other means, were mostly benefited by the climatic treatment they advocate.

The medical profession of the Southwest is composed chiefly of physicians who came here seeking relief from tuberculosis, and who have found the climate here very beneficial for their ailment. These advocates of climatic treatment may point to the fact that, should a physician living in an unfavorable climate break down with tuberculosis, he will, as a rule, seek climatic treatment.

Medical research has not cleared up yet the mechanism by which a climate influences the cure of tuberculosis. It is, however, safe to assume that the changes in the blood, the real increase in the amount of hemoglobin[2], and the increase of the lymphocytes and mononuclears[4], brought about in the body by a high altitude, and then, chiefly, the greater insolation in the ultraviolet rays of the sun, are of paramount importance in the cure.

Such observations as those of A. Spengler[3], who found in the early seventies that natives of Davos, who, after leaving home, contracted tuberculosis in lowland cities, invariably recovered their health on returning to their Alpine homes; or E. A. Sweet's statistical studies concerning the Southwest, are valuable proofs of the fact that a proper climate is of great importance in the treatment of tuberculosis. This latter author has found, for instance, that, of all the tuberculosis deaths in Albuquerque in the decade from 1904 to 1913, but 7.8 per cent were of people born in New Mexico. He has proven also that, while in the registration area, in the same decade, for every 9.1 deaths one was from tuberculosis, in Albuquerque the ratio was 10.1 to one. This fact is of greater importance when we consider that "the Mexicans are prone to the disease, and among them bad housing and unsanitary living conditions are common."

Furthermore, it is obvious that, as long as fresh air and sunshine play a fundamental part in the treatment of tuberculosis, a climate which offers abundance of sunshine, the possibility of being in the open air under the least inconvenience, and with the slightest interference of clothing in every season, must naturally be a very important factor in the treatment of the disease. The phthisiologists who disregard climate as a therapeutic factor, argue that cures from tuberculosis are observed under all kinds of climatic conditions. This argument, however, is beside the point.

Then, in selecting a therapeutic procedure, we have to choose those means which offer, in the greatest number of cases, the best possible results within the shortest time. A number of infectios diseases, for example, could be cured without the administration of a specific remedy. Yet the non-administration of antidiphtheric serum, in a case of diphtheria, is considered criminal neglect from a medical point of view. Why? Because no one can foretell with assurance whether, in a given case, the infection will be self limited and the patient cured without the antitoxin, or whether it will lead to a disastrous end. There is no reason why we shall be guided in the case of tuberculosis rather by exceptional results achieved in small numbers, than by procedures which offer relief in the greatest possible number of cases. And the latter may be said concerning climatic treatment.

Moreover, in the case of tuberculosis we have to consider our cures not only from a pathological, but also from a practical, point of view. If we so far succeed in our treatment that our tuberculous patients are able to lead a useful life in the community with reasonable comfort and without further disadvantage to their health, we have accomplished much, even when we are unable entirely to restore their former health. One who knows the conditions here in the Southwest from personal experience, knows only too well that here the percentage of the tuberculous who are pursuing a gainful occupation is, indeed, a large one.

Yet, no matter how firmly the medical profession of the Southwest believes in the value of climatic treatment in tuberculosis, it still owes to the great medical world of the country the substantiation of its conviction with entirely unbiased scientific facts, which would be convincing enough for the opponents of climatic treatment.

What are the ways that would lead to a definite decision in this dispute? In my humble opinion, we could substantiate our empirical experience on the basis of unbiased facts if we could determine:

(1) The morbidity and mortality rates of tuberculosis among the Southwest-born population in a given sector of a southwestern state;

(2) The same rates among the out-of-state born population, who were not health seekers;

(3) The mortality rate of the health seekers;

(4) The percentage of cures and improvements among the health seekers;

(5) The average duration of disability among the tuberculous population;

and compare all these data with related statistics from other parts of the country.

Important and valuable work on these lines has already been done. As far as I am able to judge from the literature at hand concerning the Southwest, Sweet's work, to which I have referred above, is the most comprehensive. His studies, as also those of others—the Committee of the Denver Sanatorium Association'—deal, however, only with the scrutiny of the mortality statistics. As important as the mortality statistics are, they cover only one phase of this complex problem.

Are investigations on a broader field, embracing all the aspects of the problem, feasible? It is my belief that they are. Take, for instance, the possibilities most cities of the Southwest offer for these investigations. It is estimated that, in many instances, the larger part of the population of these cities came here as health seekers. These health seekers are from all walks of life—laborers, artisans, professional and business men. They came to the Southwest in the various stages of tuberculosis. Their age periods are as varied as their occupations. Both sexes are well represented among them.

As a general rule, this population belongs to the class of people which has to work hard for its living and cannot afford the leisure and luxuries of the well-to-do classes. Those who "chase the cure" live, to a great percentage, under conditions which are far from the ideal we demand in our hygienic sanatorium treatment. Under these conditions it would be a relatively easy task to estimate the effect the climate has on their disease.

On the other hand, comparing the data gathered in the many sanatoria of the Southwest with those of the institutions in other parts of the country, we should be able to judge the difference in results achieved under a favorable condition.

The medical and social surveys of a city

with a large number of inhabitants, offer data which we may expect to be conclusive in themselves on account of the large number of cases involved. There are also other important factors which we have to take into consideration. In such a study as I have outlined above, it is of paramount importance that every one concerned, that is, the whole population of the city—its civic, church and official organizations—shall wholeheartedly and sincerely cooperate in the prosecution of these investigations.

In a great number of the cities of the Southwest the tuberculosis problem is a living issue. Many of these cities expect their further development from attracting the tuberculous health seekers. It is obvious, therefore, that the intelligent cooperation of any city could be easily secured for a tuberculosis survey. It is in the very nature of such a survey that it cannot be carried out by an individual alone. Such a survey calls for organized effort.

At first thought such a survey seems to present insurmountable difficulties, but he Framingham demonstration' of the National Tuberculosis Association has proven in practice that the health survey of a city of considerable size can be carried out. This demonstration has also led to far-reaching practical results. It has led to the foundation of the Life Extension Institute and to the periodic health examinations, which have already prolonged and saved the lives of countless individuals in this country. We may expect that a tuberculosis survey of a city of the Southwest will also lead to far-reaching results, which would benefit in particular the tuberculous of the entire country.

It remains now to discuss the means by which the money necessary for such a survey could be raised. Inasmuch as this survey would benefit various factors, it is evident that all those concerned beneficially should take their share in the investment it calls for.

First of all, we have to think of the National Tuberculosis Association, which holds in its ranks the leading phthisiologists and workers interested in the national fight against tuberculosis. We have to seek, therefore, if not the financial, at least the moral, support of this organization.

It is also obvious that, should this survey substantiate with indisputable facts the great value of the climate of the Southwestern States—as we have every reason to expect,—then the respective state and city in which this survey would be carried out, would be most benefited by these investigations. It is but natural, therefore, that it would pay the individual citizens of a city, the civic bodies of the city and of the state, who are interested in the numerical and financial growth of their city and state, to lend their material support to finance such a survey.

Last, but not least, there are the Life and Health Insurance companies whose business is to deal in the lives of their policy holders. It means considerable financial gain for them if they can shorten the sickness and prolong the lives of their policy holders. The Metropolitan Life Insurance Company has shown, with the financial provisions for the Framingham demonstration, that it valuates highly the possibilities a health survey offers. There can be hardly any doubt that, by proper approach, the interest of the Life Insurance companies in a tuberculosis survey could easily be aroused, and their financial aid for the necessary investigations secured.

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DISCUSSION

DR. DWIGHT ALLISON, Las Cruces, N. M. (opening): Talking about making a survey of the country, some few years ago the reports showed that Colorado was second in the death rate for tuberculosis in the United States. A committee was appointed by the Denver Medical Society, headed by Dr. Henry Sewell. After some two or three years' correspondence with the Registrar of Deaths and with doctors who wrote a death certificate which was not entirely clear, they found, by eliminating the people who came to Colorado orignially with tuberculosis, that the state was next to last in the death rate for that disease; that about 50 per cent of the people who died of tuberculosis died in the first three months of their residence in Colorado, probably due to over-exertion and through having to go to work when not able to do so. They frequently had a hemorrhage and died. A number of deaths reported as from tuberculosis after one year's residence, were found to be complicated with some other disease.

I think if Dr. Pollak would take up this matter with Dr. Henry Sewell of Denver, he can get the exact figures on this survey, which was conducted covering a period of several years.

DR. F. D. VICKERS, Deming, New Mexico: I believe it difficult to judge accurately of the value of climatic treatment at the present time. The doctor in this part of the country can prove to his satisfaction that the dry climate of the high altitudes of the southwest is of great value—other things

being equal; and the doctor in the east has had it figured out for him that "climate" is a very small part of the cure. Just who figured out the exact per cent and how he arrived at the conclusion, I do not know.

In the east, it is said, the very rich and the very poor are the only ones who can get good medical care and good hospital service; in the southwest, it is only the well-to-do who can get good care for tuberculosis.

I believe, to get the proper treatment to the great number of people who come to the southwest for tuberculosis, we must have institutions endowed by industrial organizations, religious bodies, lodges, and the state, so that the patients may get treatment for a sufficient time when they do not have money. It is most common now for a patient to have too much enthusiasm over improvement, to get back east too soon and relapse. And then it is pointed out that our climate does not cure.

To get exact statistics under present conditions, I believe impossible. I understand that not everybody with tuberculosis can go to the Southwest. Well, then, who is to go? I would suggest that those who do not respond to treatment at home should seek change of climate if possible, and before they have become far advanced cases; and I would point out to the eastern men that we have a great number of far advanced cases come to the Southwest with no means of proper treatment for a sufficient length of time, and they give our climate a bad name. They die out here, raise the death rate of the Southwest and lower the death rate of the East.

DR. F. P. MILLER, El Paso: I agree with Dr. Pollak that there has not been enough tuberculosis research work in the Southwest. I know this is true of other parts of the country also, but the Southwest has several peculiar problems. The United States Government has made several surveys of the indigent tuberculous in the southwestern states and these have been of great value. To make this work of increasing value, these surveys should be rechecked.

The Metropolitan Life Insurance Company has carried on considerable tuberculosis research work and they have also accomplished an important work along educational lines among their policy holders. Their reports prove that they have been able to reduce their mortality. They built a sanatorium for their employees and, after careful physical examinations, placed their tuberculous employees therein. This plan of discovering the early tuberculous among the employees and supplying proper treatment, has accomplished much good for the employees and has resulted in a decided educational benefit to all who come in contact with those who have benefited by this sanatorium care. I am unable to give exactly what per cent of the total number of patients who were discharged as arrested, but, of the incipient cases, after a stay in the sanatorium, 87 per cent were able to return to their work and the majority of these were able to earn more than they had ever earned before. Less than 7 per cent were earning less than they earned before the discovery was made that they were tuberculous. I am sure the officers of this Company feel that they have been well repaid for the money expended.

I believe the greatest enemy to the proper authorization of climatic treatment of tuberculosis is the National Tuberculosis Association. I have seen many statements in their literature refuting the idea that climate is a factor to beenfit the tuberculous. Recently, in Chicago, one of their representatives advised strongly against any national movement that would tend to erect sanatoria in the Southwest for the treatment of tuberculosis. Regardless of all their teaching and effort, the United States Public Health reports show that the migration of the indigent tuberculous to the great Southwest has increased.

I often ask those who do not believe in climatic advantages for the treatment of tuberculosis, why the architects are so careful to build and locate their sanatoriums in the east so as to insure, as far as possible, their natural advantages as to altitude, exposure to sunlight, freedom from dust and vapors, if they are not trying to imitate the climatic conditions which are so easily obtained in the Southwest. They are perfectly willing to advocate that their patients go to the Adirondacks because of climatic conditions. Each city and state directs the building of sanatoriums remote from their cities. Why is it that the Bureau of Standards of the United States Government sends men across the country to study sunlight in Denver, Phoenix and Mt. Wilson, and then spends thousands of dollars in trying to reproduce in Pittsburgh a carbon light which will imitate the sunlight in those localities? Why do individuals, under the advice of their physicians, build extensions in the windows of their houses in order that the patient's head may be out of doors? I answer that for no other reason than to get the advantages of fresh air and sunlight. These are questions that they avoid answering and break down all their propaganda.

In a recent survey of 600 indigent tuberculous in El Paso, 57 per cent stated that they came there on the direct advice of their physicians. In the private sanatoriums in the Southwest, I am sure that you will find 75 per cent have been referred by physicians who feel certain that climatic conditions are a decided benefit to their patients. I believe that a tuberculosis survey made by the National Tuberculosis Association, as to the actual advantages of climatic treatment, would yield more good to the tuberculous than their flat statement and denial that there is no value in climate.

DR. G. WERLEY, El Paso: We made some observations in El Paso a number of years ago, which I think Dr. Miller will remember. In looking up the death records of people who died from tuberculosis, that little survey showed us that there was very little tuberculosis developed in El Paso among our native American population. I think that is probably the best evidence as to what climate does. I think almost anybody who has lived in this southwestern climate will say that people who were born in this country do not develop tuberculosis anything like the way they do back east. I do not know whether there are any statistics on that point or not.

One of the interesting things I have seen in our Post-mortem Club we have at El Paso is the condition of tuberculous lungs after 25 or 30 years. A doctor, an old-timer in the Southwest, died at El Paso last year. I remember, when I came to El Paso, he was considered one of the worst tuberculosis cases in town. He was having hemorrhages and gave general evidences of an advanced case of tuberculosis; it was understood that he had been in a sanatorium in the northern part of New Mexico for a long time. Well! when he died, we held a postmortem and, if one did not know his history, I do not believe he would have been particularly attracted by the condition of the lungs. There were no cavities; the lungs were very adherent, with very much thickened pleura at both apices, but were air-containing and contained very little evidence that they had ever been tuberculous. We have had one or two other cases which showed virtually the same thing.

I think that is very encouraging to anyone doing work on tuberculosis—to find that a lung which

has been very badly damaged can be healed up entirely and look almost new again.

DR. M. POLLAK (closing): I thank you for the discussion and wish only to state that something has to be done to convince the medical world our climate is a decided benefit, and that we are practicing here, but the question is how to get this over and get it further back east.

A PLEA FOR MORE GENERAL POSTOPERATIVE USE OF THE DUODENAL TUBE.

W. L. BROWN, M. D. and C. P. BROWN, M. D.
El Paso, Texas

Read at the Forty-fifth Annual Meeting of the New Mexico Medical Society, at Carlstad, N. M., May 9 to 11, 1927, by Dr. K. D. Lynch, El Paso, Tex.

As we, in numerous papers, have gone into the theory of the formation of toxemes in the "segment of toxicity" of Whipple's, in postoperative, paralytic, and mechanical obstructions, we will confine the discussion today more to the practical application of stomach drainage in these conditions.

After almost six years of postoperative stomach drainage with the duodenal tube, we no longer have any doubt but that toxic material is regurgitated into the stomach. Neither do we have any doubt about its drainage from the stomach giving definite relief from toxic symptoms. In other words, if there are serious toxic fluids in the duodenum and jejunum, they are being constantly regurgitated into the stomach and may be drained from there just as well as from the jejunum by way of surgical jejunostomy.

Many times, in cases of obstruction and peritonitis, we have been able to withdraw a quart of fluid from this stomach, although the patient was constantly vomiting. In other words, vomiting deos not mean that the stomach has been emptied of either fluids or gas. In fact, we have inserted the tube and been able to hear the escaping gas all over the room, although the patient had just been vomiting.

We are now using it almost as a routine in all abdominal operations of any seriousness where vomiting would be especially painful or distention would compromise the results of the operation. In cases of difficult abdominal hernias, or other hernias, where we wish to guard our suture line from the effects of vomiting, we immediately pass the tube and leave it in place until the period of vomiting is over. If the patient is sufficiently out of the anesthetic to swallow, there is usually very little trouble in passing the tube.

Being able to prevent vomiting and, thereby, the accompanying pain, in operations on the gall-bladder, stomach, and all other serious abdominal procedures, is one of the greatest recent advances in surgery. The patient's ability to drink water freely under the same conditions is another tremendous advance toward increased comfort.

In all stomach operations, such as resections, ulcers, and gastro-enterostomies, we pass the tube before the patient is taken off the table, and leave it in place for from twenty-four to forty-eight hours. In these cases the stomach is kept empty by aspiration and frequent washings with sterile water.

When inserting the tube at the end of operation, before the patient is sufficiently awake to swallow, and because of the dryness of the throat, we find vaseline a more satisfactory lubricant than the lighter oils, as it is more adherent to the tube. Also, in these cases where the patient is still asleep, we never inject any water until we have withdrawn stomach contents, which assures us that the tube is not in the air passages nor curled up in the esophagus. In either case, injecting water might be of serious consequence.

After the use of five per cent cocaine on an applicator, we pass the tube through the nose because it is less irritating to the throat, cannot be bitten, and is not in the way during an anesthetic. It should be passed to the first mark only as it will curl up in the stomach if too much is inserted, and, therefore, may not empty the stomach of either fluid or gas. The medium sized Levine tube, number 14, seems to be the most satisfactory for general use.

The longest we have ever left the tube in place was seven days. It sometimes becomes irritating to the throat and nose, under which circumstances it may be removed and reinserted later.

Ordinarily it is left hanging by the side of the bed, the patient is given an abundance of water to drink and the water is allowed to siphon off. After improvement ensues and it appears that the patient would retain the water, the tube is hung up on the head of the bed to stop siphonage. It should be let down again and stomach aspirated immediately if nausea occurs.

We have just operated on a man who had a large gangrenous gall-bladder. The tube was passed into his stomach before he left the table and was allowed to remain. He had no vomiting or nausea. Therefore, upon my visit in the evennig, I removed the tube. Before midnight he had much nausea. The nurse re-inserted the tube and withdrew a large quantity of fluid from his stomach. She again left the tube in place.

He would not then consent to its removal until two days later.

This has been a very frequent experience. Patients who have enjoyed its benefits, are not inclined to do without it. We have found this especially true in those who had had previous operations followed by much nausea and vomiting.

The tube accomplishes the following: (1) It relieves conditions due to gas and regurgitated intestinal fluids; it is a vent pipe; (2) it effects interrupted or continuous lavage of the stomach, and, in some cases, of the duodenum; (3) it gives relief from nausea; (4) it makes possible the free drinking of water and thereby relieves that most distressing symptom, thirst; (5) it permits transgastric feeding; (6) it relieves toxemia; (7) it is a port of entry for all kinds of medication; (8) it improves the feelings of the patients; they often beg for its return after they have once experienced the relief afforded by its use.

DISCUSSION

DR. P. G. CORNISH, Jr. (Albuquerque): In our post-operative cases, we have all seen the tremendous amount of relief obtained in those cases that have been vomiting, those with regurgitation, those of acute dilatation of the stomach and other conditions of mechanical obstruction, with the ordinary gastric lavage. This gastric lavage when repeated is sometimes disagreeable. It is rather a hard thing to go through for patients with large abdominal wounds necessarily tender and painful, and sometimes, for that reason, we hesitate to use lavage when we know it should be used—because patients object to it on the ground of the pain and discomfort given while it goes on.

The use of the duodenal tube answers practically the same purpose as gastric lavage, except that it keeps up continuous drainage rather than the intermittent drainage through the passage of the ordinary stomach tube.

In certain cases, for instance cases of resections, ulcers and things of that sort, gastric lavage, while safe if used properly, sometimes might increase the pressure on the sutures and cause leakage. In fact when we do pass stomach tubes after operations, we always have a slight timidity in doing it for the reason that we think we may put on excess pressure and cause trouble. By the use of the duodenal tube, we can overcome all those fears and still do the job we aim to do. We frequently pass the duodenal tube while the abdomen is still open, in that way benig sure the tube goes through the pylorus and the things that give us regurgitation, vomiting, etc., would not keep our tube out of the duodenum; we are sure it is in there at the time.

I do not think that the duodenal tube is always a life saver in cases of acute dilatation of the stomach. I have seen it used in these conditons where you could get the stomach absolutely clear, but still your patient will persist with certain symptoms and will not recover.

The duodenal tube is apt to be overlooked in the treatment of post-operative cases because it is such a small thing, I expect it simply escapes the mind of the surgeon, but I am sure we will all find it a very useful adjunct when used in certain types of cases.

I am sorry Dr. Brown is not here to give us some of his experiences on the subject, though his paper is very complete and gives us, I think, all the fundamentals in what he is striving to do.

ANTERIOR POLIOMYELITIS

(A Case Report)

S. I. BLOOMHARDT, M. D.
Phoenix, Arizona

Read at the Monthly Staff Meeting of the Deaconess Hospiatl, Phoenix, Ariz., Sept. 26, 1927.

A male, twenty-two years of age, married, had a very active summer, driving between coast and Phoenix several times. Six days before admission to the hospital he had an annoying headache over the occipital region. This was continuous. An osteopath was consulted, and his treatment was administered without relief. There was at that time a slight fulness in region of right ear. The osteopath removed some wax. Following the osteopathic treatments, he went swimming in the cold Country Club pool. The headache continued, and there was some stiffness of the neck. Two days before admission, I saw him for the first time.

There was no temperature and the reflexes were normal. On the morning of admission the patient showed slight temperature, the headache was more severe, and the neck was a trifle more rigid. The reflexes were slightly accentuated. There was a history of nausea with severe vomiting, for several days. He complained, at this time, of pain and aching in extremities.

The examination revealed a well nourished, healthy appearing young adult male. Eyes were dull, and reacted to light; pupillary reflex was normal. There were several small boils on the back of the neck and occipital region. The neck was stiff and tender; when moved he had considerable pain. The heart and lungs were negative. The abdomen was negative except for the appendectomy scar. The patellar reflexes were slightly accentuated. The spinal fluid count was 155, with 75 per cent lymphocytes; no tubercle bacilli or other bacteria were found on smears; no growth on culture.

Diagnosis of acute anterior poliomyelitis was made. The patient was given the anti-streptococcus poliomyelitis serum, and made a steady slow convalescence. He was able to leave the hospital in six days. He has made steady improvement since and now appears to be entirely well.

Acute Anterior Poliomyelitis, also called Heine-Medin Disease and Infantile Paralysis, is an acute generalized infection, due to a filterable virus, occurring both in epidemics and sporadically. It is characterized anatomically by wide-spread lesions of the nervous system, with special localization in

many of the cases in the anterior horns of the gray matter of the spinal cord; hence, the common name.

Historical. It has the earmarks of a new infection; although, in delving into old literature, one finds instances of sudden paralysis in babies, said to be due to carelessness of the nurse. May not some of them have been cases of infantile paralysis? Certainly it has become more widespread and more common in late years, and it seems the increase cannot be wholly accounted for by the fact that it is now better known and more readily recognized than formerly. It is called the Heine-Medin disease from the fact that Heine of Connstadt, in 1840, first established the disease as a clinical entity, and Medin, in 1890, was the first to study carefully an epidemic and to recognize clinical types as the cerebral, bulbar, polyneuritic, and ataxic forms. The disease, in 1909, was transmitted to two monkeys by inoculating them with the spinal fluid of a child who had died of the disease. The inoculation period is given as from one to three days up to fourteen days; by other authorities as one to eighteen days. Experimentally, in the monkeys the inoculation time is three to twelve days.

Symptoms. The naso-pharyngeal symptoms are common. The first stage is characterized by fever, often with nausea and vomiting, drowsiness and heaviness, irritability and stiffness of the neck and back, twitchings and jerkings, sometimes by pain and tenderness in the extremities; general tenderness (hyperesthesia) on handling is highly common. This stage lasts a few days and then the paralysis appears—if it is to appear. The temporary paralysis is due to inflammatory and toxic changes while the permanent paralysis depends on destruction of the nerve cells. The spinal fluid shows an increase in the number of cells, up to about 200 per cu. mm., which distinguishes it from cerebro-spinal fever and other acute forms of meningitis.

Forms. There are a number of forms: (a) the abortive form; (b) common poliomyelitis or spinal form; (c) progressive ascending form; (d) bulbar form; (e) meningitis form; (f) cerebral form; (g) cerebellar form; (h) polyneuritic form.

Diagnosis. The diagnosis is difficult and many diagnoses are made only after paralysis appears. Some cases run a course like an acute infection; others have the picture of Landry's paralysis; in still others meningeal symptoms predominate; or there may be hyperesthesia and pain, with the picture of a polyneuritis. The prognosis is variable.

Treatment. Rest and usual treatment should be given during the febrile stage. Salicylates can be given for pain and discomfort, with opiates if necessary. Lumbar puncture should be done at once and repeated if symptoms indicate the necessity. It may be repeated daily. In the meningeal form, hot packs are useful. Serum should be given, though there is some question as to its value. Certainly, at least, it gives one moral courage and the feeling of doing something; most authorities agree that it, at least, lessens severity if given early and in good sized doses. Blood serum from one who has had the disease, if available, is useful in the early stages.

One attack confers a high degree of immunity; second attacks are unknown. No racial immunity to the infection is known, although it is, in most part, confined to the white race.

The prevention of deformities in paralyzed children is important. Massage, exercise and all active measures are contraindicated during the acute stage and as long as there is tenderness. Special attention must be given to maintaining a normal position of the paralyzed limbs so as to prevent deformities, which develop quickly. As soon as acute symptoms have subsided, muscle training should be instituted.

Transmission and Epidemiology. Many theories have been advanced as to the mode of transmission, but as is so often the case when many theories are advanced in the explanation of something, the answer is "we know not." So, we have the contact theory, the insect borne theory, milk borne infection, air borne theory, etc. The probabilities are that infantile paralysis is one of the diseases, like typhoid fever, which is spread in more than one way. It is the consensus of opinion that it is more widespread than indicated by the number of paralytic cases. Undoubtedly many cases are mild and escape notice, but leave protection. No definite or effective system of prevention can be formulated until we are sure of the mode of transmission. Health authorities are justified in requiring cases to be reported and isolated, with all preventive maesures applied. However, we can have no confidence in our prophylactic measures, which resemble the old shotgun prescriptions. At the same time, it is an infectious disease and precautions are necessary. The period during which the isolation should be maintanied cannot even be guessed at. The disease never has shown a tendency to spread in children's asylums, hospitals and other institutions.

Infantile paralysis, as a rule, does not spread in families. Only 4.3 per cent of

8,634 families attacked in New York in 1916 had more than one case. When multiple cases do occur in a family, they usually come down together or within a short time of each other. This signifies simultaneous infection from a common source.

The United States has been widely affected; from 1910 to 1914, 18,800 cases were reported and 31,500 in the next two years. The disease was progressive; epidemics grew in extent and intensity, until the disease became pandemic. In 1916 it swept the country, there being 6,000 deaths in 29,000 cases. This epidemic was the worst in history; the virus was sown broadcast and no region was spared.

A peculiarity of the disease is that while it is a warm weather disease, it is not as common in warm countries. Very few cases are ever seen in the tropics. Every country, however, is seeded with the virus. In 1924, there was an unusually severe outbreak in Iceland and also in New Zealand. Only spo radic cases occur in winter; it reaches its peak in August and early September. The disease is not influenced by social or economic conditions. It prevails in good and bad sanitary conditions. It spares neither the rich nor the poor, clean nor dirty, wise nor foolish, strong nor weak.

It is a disease of childhood; 65 per cent are under five years of age and 95 per cent under ten years. Any age may be affected, however. The average fatality is 20.8 per cent. The death rate is lowest from one to fiveyears, and becomes proportionately higher as age advances.

DISCUSSION

DR. O. H. BROWN said that we should remember that infantile paralysis may affect any age, and that the patients may pass through to convalescence without the paralysis being manifest. The disease has two stages; in the first stage there is an acute illness, which might be a bad cold or any mild infection; the patient apparently makes an improvement, and then follows the second stage in which the paralysis is found. He said that it was his opinion that the older children from 14 to 20 years are apt to be affected the most seriously. Adults ordinarily have the condition mild, if at all.

DR. MILLS said that he had learned that some of the Los Angeles physicians are having good results with the immune serum taken from recovered cases.

DR. SHARP said that he had understood that some of the physicians believed that the patients who were given the anti-streptococcus serum ran milder courses than those which did not have it.

DR. WILKINSON remarked that x-ray and static applied to the spine, after the acute stage is past, does a great deal of good.

ARTHMA FROM PERTUSSIS TOXIN

A Case Report

ORVILLE HARRY BROWN, M. D., Ph. D.

A woman of advanced years, probably nearer seventy than sixty, presented herself for various troubles, among which was a chronic, moderately severe asthma. This had begun about twenty-five years before, as well as she could estimate. It remained with her without great variation throughout the seasons. The history of her case led me to suspect common articles of her diet as etiologic agents.

Sensitization tests to foods, however, were unquestionably negative. Then I tested her against many other substances, 150 to 160, the number of test substances I possessed five years ago. Included in the tests were a limited number of bacterial proteins. She reacted to none of them save one—pertussis. This reaction was clear cut.

She was promptly started upon a highly dilute pertussis vaccine. Improvement was manifest within a week or even less.

She was accustomed to the use of a hypodermic, her finances were limited and she asked to be allowed to give herself the injections and to return to me from time to time for more concentrated suspensions of the vaccine. This I consented to do. All went well for a few weeks. She then got a notion that if a little does so much good more will do more good, or that the vaccine was innocuous; she increased her dosage faster than according to my instructions. Her asthma returned as a response to the increased doses.

Up to this time she had been skeptical, I think, about the pertussis being the etiologic factor. The reaction and subsequent ones convinced her, however, that the diagnosis or, at least, the treatment, was correct.

Reports from her up to three years after her first relief indicated that she was having no return of her asthma.

It is an interesting speculation as to whether the pertussis bacilli were being harbored by her body these twenty-five years or whether other bacteria in her body were throwing into her tissues a toxin closely enough related to pertussis toxin to produce a sensitization to pertussis toxin. It would also be interesting to know if she is well at present and if she is likely to continue in good health.

My own experience teaches me that sensitization to bacterial proteins or products is a reality. We also know that bacteria tend to become permanent parasites or guests.

The conclusion seems warranted that this person had a chronic pertussis infection which produced her asthma and she was greatly benefited by treatment with diluted pertussis vaccine.

The suggestion arises from this case that bacterial sensitization may be of such frequency anb importance as to demand routine search for it.

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APPROVED HOSPITALS IN ARIZONA

The list of "approved hosptials" issued by the American College of Surgeons, for 1927, includes eight hospitals in Arizona, as follows:

Mercy Hospital, Prescott—Fully Approved.

Veterans Bureau Hospital, Tucson—Fully Approved.

Miami-Inspiration Hospital, Miami—Fully Approved.

St. Joseph's Hospital, Phoenix—Fully Approved.

Arizona Deaconess Hospital, Phoenix—Fully Approved.

Gila County Hospital Globe—Conditioned.

St. Mary's Hospital, Tucson—Conditioned.

Southern Methodist Hospital, Tucson—Conditioned.

"These hospitals have adopted the fundamental requirements for the right care of the patient and the rendering of the broadest community service as provided for in the minimum standard laid down by this organization (College of Surgeons), charged with the great movement known as Hospital Standardization."

Conditioned approval indicates that the hospital has accepted the requirements which result in the best care of the patient, but for lack of time or other acceptable reasons, have not put them fully into effect.

MEDICAL PUBLICITY

In the Arizona Republican (Phoenix), of October 21, there is a news item from Washington, D. C., telling about the plan of medical publicity in Cerro Gordo County Medical Society in Iowa, with the brief statement that this is said to be the first general advertising done by doctors in the United States. It is this latter statement that we wish to comment on here.

The El Paso County Medical Society has been engaged in a very similar activity for more than two years, running paid advertisements in the daily newspapers of El Paso, over their name, "El Paso County Medical Society." From the trend of the article in the Republican, it seems that the Iowa society has followed very closely the plan of the El Paso doctors, and used much of the same material.

There is no question at all that publicity of this sort will come to be the rule in any community whose medical profession is properly organized. It is sanctioned by the American Medical Association, is being actively fostered and engaged in by such organizations as the Gorgas Memorial, and will undoubtedly soon become general over the country.

FOLLOW-UP THERAPY ON POLIOMYELITIS IN NEW MEXICO

The comprehensive and beautiful piece of public health work done in New Mexico by the Bureau of Public Health, in their epidemic of poliomyelitis, did not cease with the subsidence of the epidemic. Realizing that the state had an obligation to the dozens of crippled children left by the ravages of this outbreak, the Bureau has brought an expert physiotherapist from New York, who will spend six months in the state and instruct the physicians of any community, together with public health nurses or parents of the crippled children, in the principles of deformity prevention, massage, and exercises required to bring back such function as may be possible.

This seems to be an excellent plan, and

from the reports so far received, is one which is thoroughly appreciated by the citizens in New Mexico. It is sometimes difficult to secure the hearty approbation and full understanding from the public, over some plan for preventing disease, while a project which aims to cure manifest disease or to relieve the suffering which follows in the wake of disease, is given a cordial and sympathetic reception. From this action should come a more cordial relation between the New Mexico Bureau of Public Health and the people of that state, which would not be the least of the desirable results to follow.

Miss Mollie H. Donnelly is the physiotherapist who has been engaged for this work. The final results will be watched for with interest.

COLLECTION AGENCIES

Somewhere in the perusal of a large assortment of medical journals, the editor has seen the statement that physicians in any community can nearly always find some attorney, merchants' association or chamber of commerce, who will undertake the collection of their unpaid accounts, and make larger returns to the physicians than can any foreign collection agency.

Physicians will do well to bear this in mind when the representative of some collection agency comes into their officec, with fine words and big promises about collections. The Federal Credit Bureau of San Francisco is a concern which has left many physicians in Arizona sadder and wiser about collections. Their approach is quite ingenious. The agent usually introduces himself by saying that he has run across a patient who owes the doctor a bill and he (the agent) can collect it. In some instances he even says that he HAS collected $5.00 or $10.00, and asks for some more bad accounts which he offers to collect. If, among these bad accounts, he secures one or two good ones, he is fixed. He will collect the good ones and from the collection, deduct charges for "tracing" the bad accounts. One physician in Arizona for whom collections amounting to $47.50 were made from two patients, received check for $9.75 in full, the balance of the amount being charged to him for "tracing" some twenty-five bad accounts and finding out that they were not collectible.

Verily, the doctors are the cream of the "come ons" and no one knows this better than oil stock salesmen and collection agencies.

DR. LEONARD WOOD: PIONEER ARIZONA PHYSICIAN

No medical history of Arizona would be complete without recording the activities of Lieut. Leonard Wood, a young medical officer on the staff of General Crook, during the Indian campaigns against Geronimo, in 1886. Chiefly because of the fact that he began his career in Arizona, rather than the long and honorable career terminated by his death in 1927, the following tribute is copied from the September issue of THE ATLANTIC MEDICAL JOURNAL:—

General Wood, "America's first proconsul," died in Boston on August 6th, following an operation. The medical profession is proud of his achievements, for his career has not been surpassed for sheer devotion and inspiring sacrifice of self to duty. He was graduated from Harvard Medical School in 1884. He was dismissed from the hospital where he was serving an internship for an infraction of the rule forbidding interns to operate, because he did a successful emergency operation on a child. Thus early in his medical career he showed he was a man of action. He was commissioned an assistant surgeon in the Army in 1886 and served as medical and line officer in the great campaign of 1886 against the Apache Indians. In recognition of that service he was awarded the Congressional Medal of Honor in 1898. To the old Indian fighters he was known as "Bull Bison." He was "a lean, clean-cut, yellow-white-headed contract doctor" who "won his commission as a fighting man in the sun-smitten halls of the canyons and deserts of the Southwest."

With Theodore Roosevelt, then a civilian, as lieutenant colonel, and Dr. Wood as colonel, he organized the "Rough Riders" for service in the Spanish-American War. He was chief of staff and father of the "Plattsburg Camps."

Dr. Wood's career, in many respects, is one of the most remarkable of our national history. The medical profession is proud of his accomplishment in cleaning up Santiago, which a sea captain said "could be smelled ten miles out at sea." He developed yellow fever at this post, but most fortunately recovered. In 1899 he was made governor-general of Cuba. It was the commission appointed by him that solved the mystery of yellow-fever transmission. Lord Cromer, British maker of modern Egypt, described his government of Cuba as "the greatest piece of colonial administration in all history." The brilliancy of General Wood in the Philippines and in Cuba attracted the attention of the world.

As chief of staff of the Army, he left no stone unturned to place it on a modern basis. He was a foe of pacifism, and was the father of military preparedness, as expressed by training camps of the Plattsburg type, for the development of civilians for service in the reserve corps. In the early part of the World War he suffered many rebukes from the Wilson administration, and when the United States entered the war, he was "sidetracked" and sent to Camp Funston, where he trained the Eighty-ninth Division, only to be removed from command on the eve of its departure overseas. He was a candidate for the presidency, but the Republican convention at Chicago named Warren G. Harding. What a wonderful thing it would have been to have a physician as president of our country! A year later the press announced that he was about to become provost of the University of Pennsylvania, but he was "drafted" for the "Islands,"

where he was supposed to serve for a year, but remained for six years.

The General's physical misfortunes are familiar to most physicians, but his certification by a medical board, as "fit for active field service" in 1917, when he was the ranking officer of the regular army, has been vindicated by his activities in the last ten years. While in France observing warfare, prior to the entry of the United States into the war, he was wounded by a shell fragment.

Shortly before leaving the Philippine Islands this summer, where he was serving as Federal Administrator, he was operated upon for double hernia. He reported, despite his poor physical condition, to President Coolidge, at the Summer White House in North Dakota, and submitting again, on account of brain pressure, for the second time to the surgeon's scalpel, in a Boston hospital, thus suddenly ended his splendidly busy career.

Medical officers subordinate to him recently in the Philippine Islands have told us of his continued interest and sympathetic cooperation in their warfare against leprosy and other forms of sickness and disease.

Just previous to submitting to operation, he delivered an address in Manhattan in advocacy of a fund of $2,000,000 now being quietly collected in the United States to alleviate, study, and prevent leprosy. The experimental work will be conducted on the Island of Culion, in the Philippines, where there are 5,200 lepers. Dr. Wood stated that "It has been proved that cures are possible at nearly any stage of the disease, and more likely if treatment is started quickly."

Interment took place in the Rough Rider's Section at Arlington Cemetery, Washington, D. C.

It is said that General Wood left a diary containing the story of each day, dictated before the night passed. May it soon be published, telling in his own words the story of his life.

Soldier, surgeon, administrator, statesman—his work is done, and long will be remembered, although he deserved greater recognition than his country gave him.

FORREST F. FADELEY
(Albuquerque, N. M.)

Dr. Forrest F. Fadeley, who had practiced in Albuquerque for fifteen years, died at his home in Hampton, Va., on September 30th.

Dr. Fadeley practiced the specialty of urology, and was a member of the Bernalillo County and the New Mexico Medical Societies. He was a graduate of George Washington University Medical School, class of 1904, locating in Albuquerque in 1912. He was a member of the American Urological Society. He was unmarried, and the loss from the medical fraternity of Albuquerque will be keenly felt.

GRANT COUNTY (N. M.) MEDICAL SOCIETY

The Grant County Medical Society met in monthly session Sept. 30, 1927, and roll call of the members present were as follows Drs. Browne, Parmenter, Edwards, Danielson, Davis, Kramer, Frazen, Pollak, Lacy, Ferrell, Groom, McFarland, Groves, Robinson, Wood, Colvard and Mr. Stockton.

Minutes of the last meeting were read and approved.

Dr. Danielson read notes from case of orchitis bilateral without periotitis. This was a very interesting and unusual case. Discussion was entered into by most all present.

Dr. Pollak's paper on bronchial asthma, case report and postmortem findings was well presented and was a real treat to all present.

Dr. Kramer presented notes and x-ray films of an interesting case of primary carcinoma of lung. Stained section of an excised gland was thrown on the screen by means of the projectoscope.

Meeting adjourned at 10:30.

J. P. Wood, Sec. and Treas.
D. Kramer, President.

NO POLIOMYELITIS IN EL PASO

The El Paso Times of October 7th quotes DR. P. R. OUTLAW, assistant city health officer, to the effect that there has been only one mild case of poliomyelitis in that city. This is a very interesting illustration of the totally inexplicable appearance of this disease. With New Mexico suffering from a severe epidemic, El Paso, which is geographically a part of New Mexico, has entirely escaped up to that time. We hope that it will continue free from this infection.

B. J. WEIGEL, of Albuquerque, N. M., a member of the staff of the Albuquerque Sanatorium, sailed from New York on September 15, for Europe. He expects to spend several months in the University of Munich in special work in tuberculosis.

DR. L. E. WIGHTMAN (Globe, Ariz.) WEDS

On the evening of October 7th, Dr. L. E. Wightman, one of the pioneer physicians of Globe, Ariz., was married to Mrs. Ida Rocca, also a resident of Globe all of her life.

Dr. Wightman has practiced in Globe for about thirty years, and the members of the Arizona State Medical Association join with the Gila County Medical Society in good wishes for the doctor and his bride.

VIOLET RAY INTENSITY REPORTS IN TUCSON

Through the courtesy of the Desert Sanatorium, near Tucson, Ariz., the Tucson Citizen will add to its daily weather reports, the record of the Ultra-violet ray intensity for the preceding day. This sanatorium is said to be one of three places in the United Staets equipped with a radiometer, and the Tucson Citizen claims precedence over all other daily newspapers in presenting such climatic information to its readers.

EL PASO PERSONALS

DR. IRVING McNEIL has presented the El Paso County Medical Society with bound volumes of the Journal of the American Medical Association for twenty years. This very valuable addition to the society's library was accepted with a note of thanks from the society.

DR. R. E. McBRIDE, of Las Cruces, has been a frequent professional visitor in El Paso the past few weeks.

DR. E. B. ROGERS reports that there is quite an epidemic of tertian malaria in the valley about Hatch, N. M. Dr. McCamant states that there have been a number of cases in the upper valley about Las Cruces and Dona Ana, during the past summer.

DR. WALLER has closed his office in El Paso and moved to Kansas City, Mo., where he expects to locate.

DR. R. B. HOMAN was operated upon at the Masonic Hospital, October 8th, for hernia. He is convalescing rapidly and will soon be out of the hospital.

SISTER DEMETRIA, for twelve years Superior

at Hotel Dieu, was transferred to a hospital at Mobile, Ala., Sept. 25th. The physicians of El Paso, and the entire community, feel keenly their loss in this transfer. However, El Paso is fortunate in having assigned to the Hotel Dieu, Sister Vincent, formerly Superior of St. Paul's Sanitarium of Dallas, one of the largest hospitals in the state. Her splendid executive ability demonstrated in the larger institution will be a wonderful asset to Hotel Dieu and to the El Paso people.

ARIZONA PERSONALS

DR. A. M. TUTHILL, of Phoenix, has recently returned from an extended visit in the east. Between his tales of his wrestling bouts with the tiller of a sail boat in Wood's Hole, near Boston, he is willing to talk about his observations of the work of Dr. H. P. De Forest of New York upon the spine, and of Dr. H. R. Allen, orthopedist of Indianapolis, in the general field of bone and joint injuries.

DR. E. PAYNE PALMER, of Phoenix, has returned from attendance at the American College of Surgeons at Detroit. Dr. Palmer had the distinction of nominating for the presidency of the college, Dr. Franklin Martin of Chicago, from whose brain the idea of the college originated, but who has not, until now, ever been its president.

DR.F. C. JORDAN, of Phoenix, has recently returned from his postgraduate work in the east, and is located at 16 E. Monroe St., where he will practice the specialties of obstetrics and pediatrics. His special work was under Dr. Potter, of version fame, Dr. DeLee of Chicago, and with Dr. McKim Mariott for pediatrics.

DR. HARRY R. CARSON, of Phoenix, was recently stirred by memory of the dog sleds which carried the diphtheria antitoxin from Nome to the interior of Alaska, to rescue the children. Having a poliomyelitis case upon whom he desired to use human convalescent serum, he wished to secure this in a great rush from the coast. Being a lineal descendant of that man concerning whom it was said that he could buy from an Israelite at a discount and sell to a Scotchman at a profit, Dr. Carson managed to enlist the aid of the United States Government to deliver this serum in Phoenix by aeroplane. When these aviators descended upon the Arizona canal, north of Phoenix, they wondered why Dr. Carson had not requisitioned the navy department and a hydroplane. Anyhow, Dr. Carson secured his serum. The commendable feature of the incident was that in the newspaper accounts, which were quite prominent, attention was not attracted from the important part of the story by mention of the doctor's name and address. Dr. Carson saw to it that these were omitted.

DR. H. A. REESE, of Yuma, the full time health officer of Yuma County, has been busy inspecting the health conditions at the country schools of that county, and examining the school children. In this he has had the active aid of Mrs. Hansberger, the county school superintendent and Mrs. Robinson, the county school nurse.

DR. CLARA P. SEIPPEL WEBSTER, formerly of Chicago, who is now located in Tucson, has been appointed dean of women at the University of Arizona.

DR. FRED P. PERKINS, of Florence, Ariz., has been appointed physicain for the University of Arizona, and has moved to Tucson.

DR. C. A. THOMAS, of Tucson, attended the convocation of the College of Surgeons, in Detroit, the first week in October.

DR. A. C. CARLSON, of Jerome, President-Elect of the Arizona State Medical Association, recently visited Phoenix and Tucson, conferring with the other members of the Program Committee relative to the forthcoming meeting of the Association, to be held in Tucson next April.

DR. P. K. GRAYBILL, who has been located at Lake Pleasant, Ariz., in charge of the hospital department of the Beardsley Development Company, duringthe construction of a large irrigation dam on the Agua Fria, has moved into Phoenix, following the completion of the dam.

DR. B. F. JEFFERS, who was formerly located at Peoria, Ariz., and who left here for his old home in Kansas, proved to have been too thoroughly inoculated with Hassayampa water, and has returned to Arizona. He will be located in Glendale.

DR. H. B. LEHMBERG formerly of Los Angeles, has located at Casa Grande, Ariz., where he will engage in practice.

DEACONESS HOSPITAL, Phoenix, Ariz.
July Staff Meeting

The Medical and Surgical Staff of the Arizona Deaconess Hospital met Monday, July 25, 1927, 8 p. m., at the hospital with fourteen members in attendance.

The chairman of the staff, Dr. J. W. Thomas, presided, and in the absence of the secretary, Dr. Hamer acted in this capacity. Dr. Watkins of the Records Committee, reported upon the deaths for June, as follows:

No. 1004; a man who died following an operation for cancer of the splenic flexure, is discussed in full later on in these records.

No. 1006; a male of 30 years, admitted June 7, and died June 14, following tracheotomy for peritonsillar abscesses and obstruction of the laryax. Case was discussed during the June staff meeting, and no further comment made here.

No. 1101; a male of 47, who entered hospital June 20 and died Jnue 21, following operation for pelvic abscess, peritonitis, and intestinal obstruction. Case is up for discussion tonight, also.

No. 1088; a female child of 7 years, entered hospital June 4, and died the same day. Child had been sick about one week with indefinite symptoms. On the morning of June 4, she began vomiting and regurgitating water through the nose—a condition suggesting poliomyelitis. There were no neurological signs at this time. At 3:00 that day the child had paralysis of diaphragm, turned blue in color and started to expectorate frothy blood from the lungs. She was brought to the hospital, and died two hours later. Spinal fluid contained 64 cells, 75 per cent mones; no bacteria in culture or smear.

Autopsy: Marked passive hyperemia of all the abdominal and thoracic viscera. Thymus enlarged, and evidently had not undergone the normal degree of atrophy. Meningeal vessels were greatly dilated, showing marked hyperemia throughout. No definite gross changes were found in the brain or upper portion of the cord. Microscopic sections of the cervical portion of the cord showed small areas of inflammatory infiltration near the central canal and about the area of the anterior horn. Sections of the cord just below the medulla showed no additional changes. Sections through the medulla showed very diffuse round cell infiltration, most marked in the anterior portion. There are shown scattered polynuclear cells and a tendency toward the infiltrating cells to accumulate around the vessels. No inflammatory change seen on sections through the pons. Findings are believed to be quite conclusive for a diagnosis of poliomyelitis.

No. 1062; a female who entered hospital June 15, and died June 19, with a diagnosis of nephritis. No history obtained from patient other than that she

had been ill for several weeks, having severe pains in abdomen, was unable to take nourishments for some time, and had been having frequent involuntary defecations. No past history obtained.

Autopsy: Kidneys large, about seven times normal size. Kidney tissue reduced to about one-third normal but kidneys had many enormous cysts, making kidney fully seven times normal size. Large diverticulum from lower portion of ileum about the size of the index finger. Uterus and liver normal. Gall bladder contained a large number of stones.

Case 990; a male of 46 years of age, entered June 5 and expired June 11, with a diagnosis of pernicious anemia. The records do not contain sufficient evidence to justify a diagnosis of pernicious anemia in this case, although the blood picture is suggestive. No history attached to the records.

Case 978; presented by DR. GREER. This patient has had a lump in the right groin for several years. Seen in the office on several occasions. She has had a high blood pressure, in April the systolic was 176, in May it was 200 mm.

Four days before entrance to the hospital, June 2, the patient became ill with abdominal pain, nausea and vomiting, and complained of severe pain in the pit of the stomach, and was unable to take food or liquids. Patient was brought to Phoenix for medical attention, and that day became worse, with severe pain at the site of the hernia. Patient gives a history of unusually good health, until the past several years when the blood pressure has been high. Two years ago she had a "poisoning of the liver," and was ill for about ten days. She is the mother of three children, all normal pregnancies and deliveries. History was given by patient's daughter.

Physical examination: an old lady, very thin, and appears acutely ill. Skin dry and dark. Pupils react to light and accommodation. Nose, throat and ears negative. No cervical adenitis, no thyroid enlargement. Chest; percussion note slightly increased; broncho-vesicular breathing on auscultation over both fields; no moisture in chest. Heart normal in size; tones regular, rapid and with no increase in pulmonary second sound. Abdomen flat, scaphoid; no tenderness on palpation; in right groin, in region of Poupart's ligament, there is a small tumor which is not very tender to palpation. This tumor protrudes through the femoral ring. Extremities negative. Reflexes normal.

Patient was operated June 2, for strangulated right femoral hernia, probably with gut in the hernic sack. At operation a loop of ileum was found in hernial sac. Gut when released was very dark in color with a fibrous ring at one end of loop as if incarcerated at this point for a long period of time. Gut was patent. Hot towel was applied to discolored gut. There was considerable free fluid in pelvis.

Patient's urine on entrance was amber, slightly cloudy, acid, slight trace albumen, no sugar, trace acetone, no casts, occasional pus cell, no blood.

This patient continued to run a temperature, and on June 9, the incision was opened and a considerable amount of pus evacuated. Culturally the material showed streptococci and colon bacilli, the blood picture at that time was W. B. C. 20,200 with 90 per cent polys, and 10 per cent monos. Wound irrigated t. i. d. with chlorozene solution and two per cent mercurochrome, and patient continued to improve nicely.

DR. GREER, in discussing the source of the infection, spoke of the probable sources, the surgeon, the assistant, a slip in technic or the patient herself.

DR. HAMER assisted with the operation and observed no slip in the technic. A patient at this age with low resistance, and with this low incision, probably infected herself. Possibly this was a skin infection. The condition of the bowel, with necrotic fat, low body resistance, and the colon bacillus coming through the affected bowel itself may have been the source. Dr. Hamer believes that the infection came from the patient herself.

DR. KENNEDY in discussing this case said that he had irrigated the wound t.i.d with Dakins and mercurochrome, and that the infection cleared within two weeks, but that there was no tendency to date for the wound to close, and that he had been using Balsam of Peru in the hope of stimulating granulation.

Dr. Greer asked Dr. Kennedy what was his idea of the source of this infection. Dr. Kennedy replied that he thought the patient infected herself, possibly by the colon bacillus migrating through the injured bowel wall.

DR. WATKINS said that the appendix is perforated bateriologically before it is grossly; that this is probably true for any bowel before visible perforation, and was probably true in this case.

DR. GREER thought it would have been good judgment to have cultured the ascitic fluid at the time of operation.

Case 1004; by DR. C. B. PALMER. The patient, a white man of 44 years, and painter by trade, entered the hospital June 7, and expired June 10. The patient was taken sick June 6, with severe cramp in abdomen, and a lump appeared on the left side of the umbilicus; when seen nine hours later, there was a lump over the appendix region. For the past two years the patient had trouble with the abdomen, but never vomited. At times he would be nauseated, and could feel a lump in the abdomen, usually on the right side. The mass at times seemed to roll over to the right side in region of the appendix.

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Patient gives a negative family history for cancer or tuberculosis; was always well as a child, having only had measles. No other illnesses. In 1918 he had a severe attack of influenza, and was ill for about three weeks. He did not recover from this as rapidly as he should, but had no definite complications. Bowels always move with difficulty. On the day of entrance the bowels moved twice. Patient states that seven years ago he noticed blood in urine, but has noticed none since.

Examination: Somewhat emaciated man of good color. Head, eyes, ears and nose normal. Teeth bad, with extensive pyorrhea. Tongue coated. No adenopathies of neck. Chest normal. Pulse regular, heart sounds normal. Abdomen, severe cramps that come and go, (wife states they are like severe labor pains when most severe). Large mass as though cartilage or distended intestine could be seen over appendix region. This is due to peristaltic movement of intestines. Good deal of gurgling. Left side very soft. Right side quite rigid. Soft mass felt over appendix region. Kidneys apparently normal. Very little tenderness over gall bladder region. Profuse rigidity over right side of abdomen. Patient was sent into the hospital and operated as soon as preparations could be made. W. B. C. at that time was 12,100 with 80 per cent polys, temp. 97, pulse 82, respirations 19.

With a pre-operative diagnosis of obstruction of the bowels, the abdomen was opened by right rectus incision. Bowel found to be tied down to splenic flexure and a large angulating carcinoma of large intestine was found, which it was not possible to remove due to involvement of underlying tissue and its immobility. An anastomosis with Murphy button was performed between cecum and sigmoid. Considerable bowel contents was lost and flowed over operative field, due to extreme distension of large intestine, although suction machine was used to remove this. Closure was with one cigarette drain.

The patient died on the third day after operation. Soiling with onset of peritonitis probably was the cause of death. It would probably have been better to have made an artificial anus, but in this case, patient only had a short time to live, so that probably would have been inadvisable. This is a peculiar case in that it came on so suddenly. Although this man had intestinal trouble for two years, yet the acute onset came on suddenly. (Dr. Palmer exhibited the cancer specimen).

DR. GREER in his discussion felt that Dr. Palmer did the right thing even though the patient died of peritonitis. He asked if anyone could give a classification of the type of cancer involving the bowel, (no response).

Case 1101; by DR. KENNEDY. This case was a male of 47 years, and owing to the critical condition of the patient, an inadequate history was obtained. He had felt badly for two weeks, with vague indefinite condition, and was out of town when taken sick, with a rectal abscess, and did not return to Phoenix until the night before death. Complained first of pain in the abdomen and his whole complaint centered there rather than in the region of the rectal abscess. Had been running a high fever. His pain was more generalized, similar to that of an obstruction, and when seen on the night of admission he refused operation. Physical examination was limited to abdomen. There was a bulging in the right inguinal region that represents a hernia which is easily reducible. There is a generalized and very marked abdominal rigidity; no definite tumor masses could be felt. In the region of the rectum there is a definite reddened area that represents an ischiorectal abscess.

Urine, amber color, cloudy, acid reaction, specific gravity 1.032, heavy trace of albumin, no sugar, positive diacetic acid, no acetone, many granulated casts, occasional pus cells, no red cells. Blood, hemoglobin 75, leuccoytes 4100, polynuclears 70, mononuclears 30. Temperature on admission was 101.2 degrees, pulse 100, respiration 28. Patient was seen the next morning and operation again advised because of probable ileus of the bowels. Right rectus incision made and considerable slightly cloudy fluid escaped from the abdomen when opened. Fluid had a bad odor. There were heavy omental adhesions into the hernial sac, the omentum and intestines were adhered with fibrosis over head of cecum and appendix. No obstruction was found. A hard indurated area in the region of floor of pelvis could be palpated, the appendix was removed, the omental adhesions were clamped and cut from the hernial sac. A perenial abscess was incised and drained.

Post operative diagnosis, peritonitis, probably due from ischiorectal abscess. During the operation the patient was in profound shock and intravenous saline was given during the operation.

DR. KENNEDY, in his comments on the case, said that the patient refused operation when advised by Dr. Goodrich on the night of the patient's admission. There was definite evidence of a pelvic peritonitis when abdomen was opened and the fluid had a most peculiar cadaverish odor. When the abscess was opened there was but little pus but a great deal of necrotic fluid. This case simulated an obstruction; the appendix did not seem to be the cause of the peritonitis because it was small and had

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only small amount of fibrous exudate on its surface. The patient lived about three hours following operation, and died in extreme delirium. The cause of death was probably peritonitis and toxemia. No discussion further on this case.

Case 1186; by DR. SHELLEY.

This patient was admitted July 9, and discharged July 28, well. The patient is a shipping clerk, 32 years of age, male and married. His present illness began about 10:30 p. m. on July 8. At that time he ate some ice cream, watermelon and drank some beer. A little later he spoke of feeling very distended. About midnight that night he awoke having severe cramps in stomach. He felt very nauseated but did not vomit. Pain was continuous, very acute and cramping in character. He complained of pain in back also. Dr. Shelley visited the patient that night; repeated enemas were given with very poor results. Patient states that the bowels had moved twice that day. The morning of admission the patient began to vomit, vomitus appeared to be undigested food and dark brown fluid very bitter tasting. Condition was not relieved that morning so patient came to the hospital for furfther treatment.

Patient has always been a very healthy man. No history of any heart or lung trouble; no tuberculosis in the family; appetite always good. For some time past there has been trouble occasionally with gas, bowels very constipated, he has been in habit of taking cathartics about three times a week. The renal history is of no consequence.

The patient is married, wife in good health, no children. (History given by patient's wife).

Physical examination: A well nourished man who appears to be one that has been well and healthy. Skin is clear, pupils react to light, heart and lungs normal; marked rigidity of abdomen, no difference in the two sides; appears as if the right lower quadrant is slightly more distended than the left on palpation; no particular point of tenderness was elicited either above the crest of the ileum or in the kidney region. Extremities negative. Urine, amber in color, slightly cloudy, acid, specific gravity 1.025, slight trace of albumin, no sugar, no acetone, no diacetic aced, no casts, occasional pus cells, 20 to 30 red blood cells. Blood, hemoglobin 85, R.B.C. 5,2210.-000, W.B.C. 15,100, polynuclears 88, mononuclears 12. Temperature on admission was 99, pulse 88, respiration 25.

Operation was advised, with diagnosis of intestinal obstruction, probably ileus, cause unknown. There was found at operation,a post-cecal appendix held down with heavy adhesions, making a sharp kink in the ileum about three inches from the ileo-cecal valve; bowels were greatly distended; the jejunum was flat and collapsed.

DR. HAMER was asked to give an account of what was found and done at the operation. He said that the bowels from below the ileo-jejunal junction were greatly distended with gas, the small intestine above that point was very flat; the cecum in particular was greatly ballooned. An exploration of the bowels was made from one end to the other, and the only cause for this condtiion which could be found was at the appendix region. The appendix was removed after being freed from heavy adhesions and trocar inserted at the lower end of cecum in order to release the gas and fecal contents in

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the bowel. Closure was made with one cigarette drain. Patient's condition was good.

DR. GREER, in discussing this case, asked why the peculiar type of obstruction with distension of the ileum-cecum and large bowels. He thought that with such a condition the obstruction should have been in the sigmoid. This case to him did not appear to be one of intestinal obstruction.

DR. HAMER in reply said that the whole bowel was explored and nothing was found except from the kink in the ileum due to appendiceal adhesions. After the operation the patient made a very nice recovery and has had no further trouble.

Case 1099 by Dr. KENNEDY.

A man of 33 years, admitted to the hospital June 20 with the following history: Taken sick June 16, with pain in the epigastrium and took sal hepatic with only slight relief. Continued to have a dull ache in the upper abdomen but he continued to work all day, June 17. On Saturday morning, June 18, he felt so much worse that he consulted a doctor, and was given calomel but no relief. That afternoon he began vomiting, projectile and watery in type. Was given morphine that evening, but began vomiting again the following morning. The night of June 19, took large dose of castor oil with no results; enemas had been given but with only fair results. On Monday patient's vomiting contained fecal matter, the abdomen was very tender and pain more severe. That night he came a distance of about 170 miles by automobile to the hospital and was operated at once.

Physical examination on entrance: Man appeared to be extremely toxic and dehydrated, retching and vomiting of dark fecal like material, with board like rigidity in the abdomen; with evidence of generalized bowel distension; no tumor masses could be felt. Blood, hemoglobin, 85, leucocytes, 11,900, 83 per cent polynuclears. Urine, muddy in color, very cloudy, alkaline, specific gravity 1.039, trace of albumin, negative sugar, casts, pus cells and blood.

The patient was advised immediate operation: diagnosis ileus of the bowels. A great deal of clear fluid poured out of the abdomen when it was opened and a greatly distended ileum protruded with force into abdominal incision. This was an enormously distended ileum, as large as a distended colon, very red, injected, with fibrous deposits on it; only one half of the ileum was inflamed. This loop of ileum from the region of the left upper quadrant was found attached, with heavy adhesions, to the head of the cecum, making this portion into a complete twist. This was released by clamping both sides, and cutting the adhesions, holding it and giving the attached forceps two turns. The man's condition was very poor, pulse was weak, irregular, and skin was cyanotic; for that reason the incision was closed with through and through sutures. The patient was given saline during the operation.

The man's immediate post-operative condition was very grave; he was given 3500 c.c. of saline during the night, and the following morning appeared much better. From that time on the patient had fairly steady recovery, and left the hospital a few weeks later, apparently well.

DR. GREER in discussing this case asked Dr. Watkins about the use of the fluoroscope in diagnosing intestinal obstruction.

DR. WATKINS replied that the presence of obstruction had been ascertained a few times by noting dilated coils of bowels which could differentiate obstruction from peritonitis; on one instance he diagnosed the presence of intussusception and in one instance saved a patient from an operation by proving that an extensive bowel dilatation was not due to intestinal obtruction.

DR. LITTLE thought perhaps this case might have been a case of obstruction at the hepatic flexure and cured by manipulation of the bowels.

DR. GREER did not think that it was anatomically possible to get a twist of the bowel at the hepatic flexure.

There was no further discussion on the case and meeting adjourned.

J. D. HAMER, M. D., Sec'y Protem.

DEACONESS HOSPITAL, Phoenix, Ariz.

(September Staff Meeting)

The Medical and Surgical Staff of the Arizona Deaconess Hospital, met Monday evening, September 26, at the hospital with 25 in attendance. The following cases were reviewed:

Case 1391. Presented by DR. McINTYRE. Two year old Mexican baby, admitted to the hospital in extremis. The spinal fluid count was 189, with 75 per cent lymphocytes; no bacteria on smears. The stool examination was negative. The baby had been unconscious for seven days. The head and neck were negative. Breathing was jerky and irregular; heart and lungs were normal; pulse, 94, irregular. Abdomen was markedly distended with gas. Both knee jerks were greatly exaggerated; pupils were apparently normal. Rectal temperature was 102. Diagnosis of encephalitis was made. Baby lived less than 24 hours after its admission to the hospital. Dr. Carson saw the baby in consultation with Dr. McIntyre, and concurred in the diagnosis of encephalitis. Dr. McIntyre said there was very little to report about the case as there had not been sufficient time to work it up adequately.

The secretary explained that the reason he had put this case on the program was, to provoke discussion as to whether the diagnosis might have been infantile paralysis. The spinal fluid count at least was suggestive of this.

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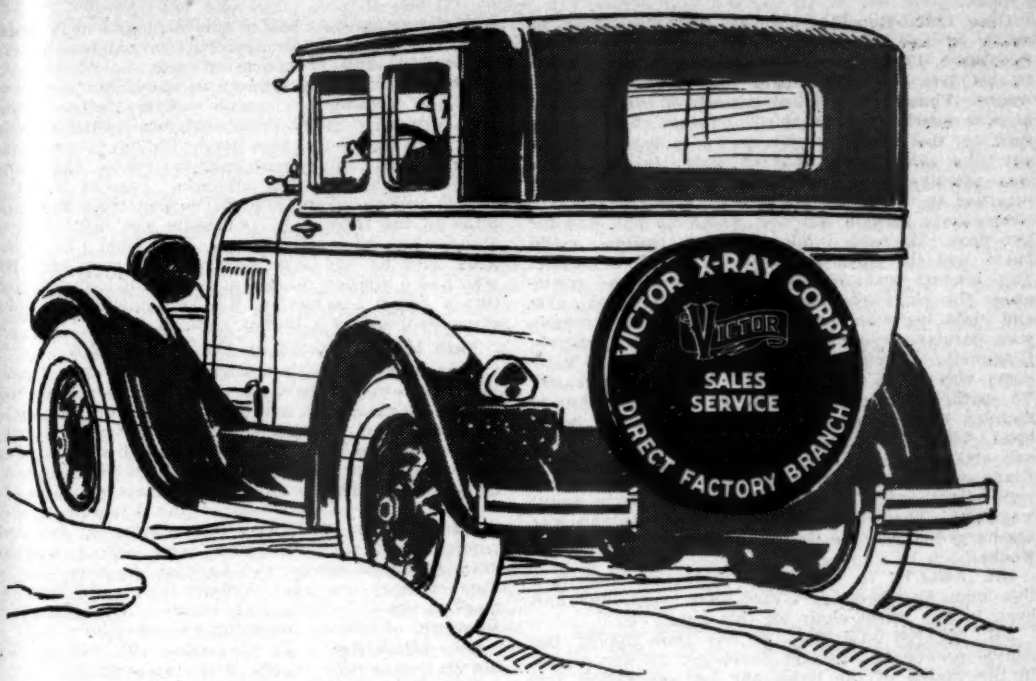

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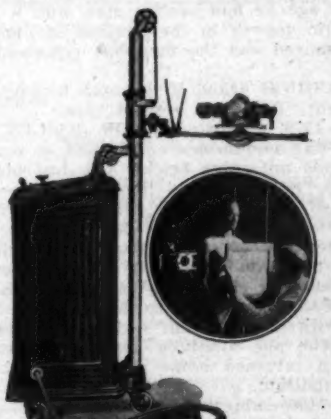

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Case 1267. Reported by DR. BAILEY. Male, 53 years of age, American. This patient was seen October 1, 1928, when he complained of severe pain in his left eye. This pain had been there two weeks. There was marked tension of left eye, and he was nearly blind in it. The retina could not be seen by the physician. There was a cataract present; the conjunctiva was reddened; the right eye was practically normal at that time. The patient returned to the doctor on July 15 of this year again with severe pain in left eye, which he had had for two days. He said it felt as though the eye would burst, and the room appeared to be full of smoke. The tension was 56; the conjunctiva was chemosed; the right eye was still good. His right arm and right leg were partially paralyzed; the tongue was paralyzed so that it interfered with speech. Diagnosis of acute exacerbation of chronic glaucoma was made, and the left eye was enucleated. Th pathological examination of the eye showed nodular thickening of the sclera, near the nerve head, with cellular infiltration. There was no typical arrangement of the cells, and no melanosis. Diagnosis was probably sarcoma. The urine had a very slight trace of albumin; the leucocyte count was 4800. The patient had normal course and was discharged from the hospital at the end of two weeks.

DR. FELCH, in discussing this case, said that this man had been paralyzed two years, and had been in the wheel chair all this time.

DR. DRANE said that, at one time during the convalescence, the patient developed an acute pain in the region of the liver, and he was called, but was unable to find the cause for the pain.

DR. MILLS, in discussing the case, said there was evidence that the tumor mass was a new growth, but he suggested that it might have been a gumma rather than a sarcoma. He said that a few months ago he had seen a man with a small dark melanotic growth in the canthus of one eye. This was removed and the man has remained well ever since.

DR. COUCH asked if the man had had syphilitic treatment. Dr. Felch replied: yes.

Case 1279. Reported by DR. BAILEY.

This was a male negro, 50 years of age. On July 18 he was unloading bricks, and dust blew into his left eye. He considered it of little importance and continued working until July 23. He reported at the doctor's office on the 25th with corneal opacities, chemosis of conjunctiva, and much pain. No foreign body was found. On the 27th there was pus in the anterior chamber. Wasserman reactions negative. Patient was sent to the hospital; iris was dilated with atropine and ice compresses were applied. The pus condition gradually cleared up and the man returned home on the 8th of August in good condition.

Case 1490,—anterior poliomyelitis,—was presented by DR. S. I. BLOOMHARDT. (See separate article this issue.)

Case 1412. Reported by DR. V. S. KENNEDY.

Male, 47 years of age, complained of sharp pain in the lower left quadrant of the abdomen and radiating to the umbilicus and later tended to radiate down the left leg. Seven years previous, the patient had an attack which was considered to be bowel obstruction, and has had three or four similar attacks since. On Monday, the 22nd, the patient had nausea with pains as described above. Enemas, castor oil, and salts were given but did not seem to move the bowels to any satisfactory degree. Gastro-intestinal x-ray was done and there was definite spasm of colon without obstruction. A few days later he had another attack of sharp pain in the lower left quadrant, and the patient was sent to the hospital, for study of urine and for sedatives.

The examination showed the head and neck negative, heart and lungs negative, the abdomen was soft and doughy, no spasm of recti and no masses; there was slight tenderdness in lower left quadrant over the sigmoid and ureter region; reflexes normal; urine had many blood cells but was otherwise negative. The leucocytes were 12,750, 86 per cent polynuclears; subsequent examination of the urine showed slight trace of albumin. Patient made a speedy recovery and was discharged from the hospital on the third day. Diagnosis was left ureteral stone with secondary spasm of sigmoid. Dr. Kennedy said he had also seen another case recently who had a similar condition. At first it looked much like a bowel obstruction, but subsequently it gave every evidence of a kidney stone.

Vase 1388. Reported by DR. FRANKLIN.

This patient was in an auto wreck. The examination showed there were scalp wounds on the top of head and about the eye; there were multiple abrasions and contusions about the entire body. The chest was normal; the abdomen had loss of sensation below umbilicus. The legs were completely paralyzed. The x-ray disclosed fracture of cervical vertebra. Patient entered the hospiatl in delirious condition. Had high temperature all day and vomited a dark fluid; pulse very fast. Condition gradually grew worse, and he died the second day. Temperature was 105.6 axillary. Dr. Franklin remarked that the very high temperature was characteristic of lesions involving the medulla.

DR. WILKINSON in discussing the case asked for an explanation of the high temperature.

DR. FRANKLIN replied that it was due to the congestion of the medulla.

DR. KENNEDY said that he had seen a case in San Francisco in which there was a fractured ver-

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tebra. The patient was operated upon and the comminuted bone removed. He was apparently doing very well; the physician called for a catheter, and introduced it past the medulla; almost immediately they noticed the patient's skin was growing warmer and before long the temperature reached 108, and the patient died.

Case 1366. Presented by DR. DRANE.

Male, 64 years of age, who had extensive swelling of abdomen and legs. This began about a month ago; he had a great deal of nausea and vomiting and sometimes had difficulty in swallowing food. Past history was relatively unimportant. The urine had a very slight trace of albumin, Leucocytes 9,850. Examination showed that the head was normal. Pupils contracted and did not dilate readily; teeth were in bad shape; lungs were normal. The apex beat of the heart was at the nipple line; the abdomen was very tense; the anasarca was extreme and there was much edema in the back, up to the lower ribs. He had double hernia. He gradually developed extreme jaundice. On the 17th a mass was felt below the xyphoid cartilage in the region of the gall-bladder. The patient gradually grew worse and died. Diagnosis of cancer of liver was made.

The secertary said that he had placed this case upon the program for the purpose of calling attention to the importance of getting autopsies. The probabilities are that Dr. Drane's diagnosis is as satisfactory as any that could be advanced in the absence of the pathological findings. There are many of these cases that can be autopsied if an effort be made to get consent. The secertary made a further plea that we make an effort to raise the percentage of autopsies this winter.

Case1328. Presented by DR. J. D. HAMMER. In February, 1927, the patient had several convulsions and stated that he had never felt well since. He was exceedingly nervous, with coldness and tingling of extremities. He had a disability in walking. legs were weak and mumified. He was admitted to the hospital on August 4th with temperature of 99, and pulse 62, respiration 22. He was very weak and states that he could not move the left leg.

Examination shows a male 60 years of age, talkative, rational, lies in bed with no apparent pain. Hearing is good; vision impaired; pupils react sluggishly; right pupil is irregular; no strabismus or ptosis and no diplopia. Nose negative; teeth were not in good condition; tongue protruded to the left; throat and neck negative; lungs negative; heart was negative; blood pressure 142/76. Abdomen scaphoid; otherwise normal. There was a paresis of left arm and a wrist drop on left side. There was a diminution of sensory perception over distribution of radial and median nerves; reflexes more active on the right than the left. The left leg was weak, although not so markedly affected as the left arm. There was no decrease in sensation. Paresis was present also on left side of face, cheek and tongue, as well as the lips and the intercostal and abdominal muscles. Urine showed very slight trace of albumin; leucocytes 13,850. At the end of the third week the patient was allowed to be taken home by ambulance, although he did not appear to be in good condition. Diagnosis of apoplexy was made.

Case 1317. Presented by DR. SHELLEY.

Age 17, married, pregnant, last menstrual period Feb. 28th; about five months pregnant. Entered the hospital Aug. 3, 1927. Urinalysis at monthly intervals showed a slight trace of albumen and some times an occasional pus cell—three to four pus cells and sometimes none.

Her general condition was good, with the excep-

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tion of some vomiting during first months of pregnancy; appearance healthy. July 28 she became ill; had chills and fever ranging from near normal to 104 or 105. There was pain in the right side from the crest of ite ilium upward and backward in the region of the right kidney; it radiated to the bladder region at times. There was tenderness over region of kidney. Urinalysis showed slight trace of albumen and hundreds of pus cells to the high dry field. There was much tympanitis which was always relieved by enemas. This condition continued with intervals of apparent improvement until the evening of Aug. 2, when she became worse and the conditions seemed to change.

In the meantime she had been given nexamethylin and the urine was kept acid. She was also given some anodyne but no morphine. On the evening of Aug. 2, he was called because she was much worse. Pain very severe, and nausea, with a toxic type of pulse and toxic in appearance. Abdomen more distended and point of greatest tenderness seemed to be over cecum. There was definite rigidity of abdominal muscles; more marked on right side. A white count was made which showed 6000 leucocytes, 88 per cent polys.

He then called Dr. Goodrich. After a very thorough examination he was convinced htat she must have an acute append.x. He hesitated to operate on the theory that it was possible htat the appendix had already ruptured. The question was then asked whether because of the extreme toxemia it would not give her a better chance if the abdomen was opened and drained rather than let her continue to absorb.

The physical examination revealed that the head was negative; no enlargement of the thyroid. Cardiac dullness normal, no murmurs. Pulse was rapid and weak. Lungs had a few fine crackling rales on left side in axillary line; abdomen was much distended with gas. Liver dullness was normal and it had no tenderness. Uterus enlarged from five months pregnancy. Very tender over cecum and backward to kidney region. Skin moist and anemic. Very cyanotic and the general condition was one of extreme toxemia, with rigidity of abdominal muscles.

We finally decided to operate, and she was taken to the hospital at 2 a. m., Aug. 3, and operation completed at 4 a. m. The appendix was found to be chronically inflamed and the right kidney was enlarged. No other pathology was found.

The family history is negative and the past history reveals only an attack of influenza some years ago, and some nausea during the first months of pregnancy.

Since leaving the hospjital she has been slowly improving in strength, and has not had much pain. She still has some pain in the region of the abdominal scar but has just as much pain and of same character on left side which seems to be in the descending colon. She seems to think all the pain she has now is from gas in the bowels because when she is relieved of gas pain ceases. There is no pain nor tenderness over either kidney. The greater number of reports on her urine shows hundred of pus cells to macroscopic pus, and a trace of albumen.

Two weeks ago she had pain from uterine contractions. For a few hours it seemed as though there would be premature labor. A dose of morphine relieved her and since then there has been no return of this condition.

The conclusions made in this case is that she is suffering from a subacute pyelitis which has been responsible for most of her symptoms. It has probably benefited her to get rid of her chronically inflamed appendix.

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BOOK REVIEWS

Diagnosis and Treatment of Diseases of the Stomach with an Introduction to Practical Gastro-Enterology, by Martin E. Rehfuss, M. D., Assistant Professor of Medicine at Jefferson Medical College; with 519 Illustrations; some in colors; Philadelphia and London; W. B. Saunders Company; 1927; $12.00.

It is such a book as this which brings unusual joy to the reviewer. All books or nearly all books are good books; but some are superior to others. This is a superior one. Professor Rehfus has prepared this book on Gastro-Enterology in a scientific manner. It is a monograph or at least it is monographic in style; for this reason it will not grow useless with age as do so many books. There are citatiops of literature on nearly every page. On many pages there are a number of citations.

The subject matter is presented step by step as the knowledge has been accumulated and points a way for further investigation. The author himself has done a tremendous amount of research work and this he has fitted in with the research work done by others. The author in his preface presents what is probably the key note of the work by saying: "My only hope is that this volume may justify its existence by stimulating further study in this fascinating subject."

The physician who is looking for a work upon gastro-enterology to give him long lists of prescriptions to try in this or that condition will probably be best satisfied with another book than this. But that physician who is looking for something to read that will give him stimulation of thought upon the problems of gastro-enterology will probably find no other book that will help him better than will this one.

Chapters have been contributed by Dr. John B. Deaver, Dr. Chevalier Jackson, Dr. Willis F. Manges, Dr. John T. Farrell, Jr., Dr. John A. Kolmer, Dr. J. Alexander Clarke, Dr. Louis H. Clerf, and Dr. Hobart A. Hare. The author has made an effort to have the book as complete as possible.

The reviewer would criticize but little. There are numerous cuts and pictures. It would seem that some of these would be more helpful if they had more description under them. On page 941 the seventh line from the top, the word effect is used where the author means affect. On page 1063 in the third from the last paragraph in number five is the sentence, "The total acidity is usually high in case of achlorhydria." This would seem to be an error of some sort. There are some very helpful tables in the last few pages of the book.

This is one of the great medical books of the year and deserves a place in the libraries of all physicians and surgeons. O. H. B.

Clinical Case-Taking; Supplement to Methods in Medicine, by George R. Hermann, M. D., Ph. D., Assistant Professor of Medicine, Tulane University, New Orleans; the C. V. Mosby Company; St. Louis; 1927; $1.50.

This book is particularly timely in this day when the doctors should be preparing themselves for the periodic physical examination. A busy physician is probably already away from the habit of going over the most of his patients in a careful systematic routine.

The book is an outline of those things which should be known as the child knows his ABC's and multiplication table, to be used in taking histories and in making physical and other examinations.

It occurs to the reviewer that a group of physicians could use this book as a text and again go to school with one of their group as teacher and fit themselves for making the periodic health examination. O. H. B.

Minor Surgery, by Arthur E. Hertzler, M. D., F. A. C. S., Chief Surgeon, Halstead Hospital; and Victor E. Chesky, A. B., M. D., F. A. C. S., Chief Resident Surgeon, Halstead Hospital; with 438 illustrations; The C. V. Mosby Company; 1927; $10.00.

Hertzler's reputation as a writer is sufficient guarantee of value in any book prepared by him.

The term minor surgery is made to do duty, in this instance, with an unusual comprehensiveness. For example: in chapter XI, on diseases of the abdominal wall, he discusses, not only tumors, cutaneous tumors, lipomas, and desmoids, but sarcoma, hernias, umbilical hernias, hernia of the linea alba, inguinal hernia and femoral hernia. There are other chapters in which it would seem that major surgery, or even medicine in general, was being discussed rather than just minor surgery.

The subject is thoroughly presented and yet there is a conciseness and clarity about the language which makes it easy to read and understand. On page 85, in the middle of the last paragraph, a number of lines are jumbled so as to paralyze the sense.

The book would seem to be particularly useful and practical for the medical student—used as a text. It covers such a range of subjects, however, that it is also useful especially to the general practitioner as a reference work. O. H. B.

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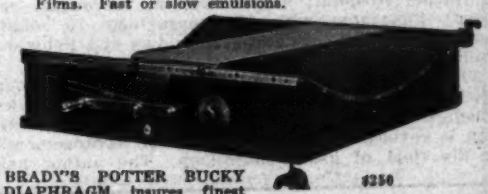

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Emergencies of a General Practice, by the late Marthan Clark Morse, A. B., M. D., F. A. C. S., revised and rewritten by Amos Watson Colcord, M. D., Surgeon, Carnegie Steel Co.; Surgeon, Pennsylvania Railroad sytsem; ex-President, Association of Railway Surgeons, Pennsylvania Lines East; ex-Chairman, Health Service Section, National Safety Council; member of Board of Directors, American Association Industrial Physicians and Surgeons; Second Edition; St. Louis; The C. V. Mosby Company; 1927; $10.00.

Dr. Colcord has revised the 1918 issue of the late Dr. Morse's book and made some additions of his own. In other places he has omitted material that seemed to be out of date. The purpose of the book is to present the most useful and practical methods for all sorts of emergency work in general practice. The chapter on fracture work seems to be exceptionally full and practical. The book is written in concise, lucid style.

The reviewer finds little to criticize. Concerning the treatmente of hemoptysis, the author advises that the patient be placed as flat as possible. We do not agree with this; the patient should be placed with the chest as high and with the legs as low as possible so as to make a reservoir of the abdomen and legs for the blood. Likewise, in the treatment of apoplexy, the author fails to caution that the head should be kept as high as possible so as to promote anemia of the brain. He also perhaps does not emphasize sufficiently that the patient should be kept quiet for a sufficient length of time. The word isolation is repeatedly used in place of insolation. The index is far from complete. The author presents a great many splendid "tricks" which the average practitioner must needs refresh his mind about from time to time. This book will serve its purpose admirably.

O. H. B.

Diseases of the Digestive Organs, with Special Reference to Their Diagnosis and Treatment, by Charles D. Aaron, Sc. D., M. D., F. A. C. P.; Professor of Gastro-Enterology and Dietetics in the Detroit College of Medicine and Surgery; Professor of Gastro-Enterology in the Detroit Postgraduate School of Medicine; Consulting Gastro-Enterologist to Harper Hospital; Fourth Edition, thoroughly revised; illustrated with 174 engravings, 70 roentgenograms and 13 colored plates; Lea and Febiger: Philadelphia; 1927; $11.00.

The fact that this book has passed through four editions in a comparatively few years bespeaks excellent merit for the work. The present edition is revised in the light of recent advancements in the field of gastro-enterology. The author has covered the subject in almost an encyclopedic style so that it matters but little what one looks for, he is apt to find it here. It is easy to read.

The cuts are numerous and good. Some of them are a bit antique. Doctors with whiskers, nurses with constricted waists, and women with long hair give a tinge of erstwhile years, not reflected by the text.

There are 927 pages, 48 of which are occupied by the table of contents and preface and 53 by the index. The words and lines are spaced relatively narrow but not to such an extent as to make the reading difficult. The headings of the paragraphs and chapters are in bold type.

The subject of allergy is not discussed, at least so far as the reviewer is able to find. The relation of this subject to gastrointestinal disturbances or to pathologic states thereupon, would seem to warrant some mention of it in the text.

Clinicians will find this a valuable book. The reviewer has no hesitancy in recommending it.

O. H. B.

An Analysis of Secretarial Duties and Traits, by Dr. W. W. Charters and Miss Isadore B. Whitley of the Bureau of Retail Selling, University of Pittsburgh; Williams and Wilkins Company, Baltimore, Maryland; 1924; $2.50.

Physicians and surgeons, probably more than other men, need carefully trained, thinking secretaries. A physician who is meditating over life and death problems cannot properly get down to sordid questions of making methodical records of three dollars, five dollars, twenty-five dollars, or even five hundred dollars as a routine. Neither can he meet the patients as they enter the waiting room, extending a welcome by a smile, a pleasant good morning or afternoon, or a jolly hello, or just the type of dignified greeting which says to the patient, "This is just the right place for you."

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This small book is the result of an investigation into those characteristics which are found, most commonly, in successful secretaries.

It will do well for each physician and surgeon and employer of secretaries generally to possess this book, to study it, and then to pass it along to the secretary. It can but be helpful if it is used.—O.H.B.

Physiology and Biochemistry in Modern Medicine, by J. J. R. MacLeod, M. B., LLL. D. (Aberd.), D. Sc. (Tor.), F. R. S., Professor of Physiology in the University of Toronto, Toronto, Canada; formerly Professor of Physiology in the Western Reserve Uni-

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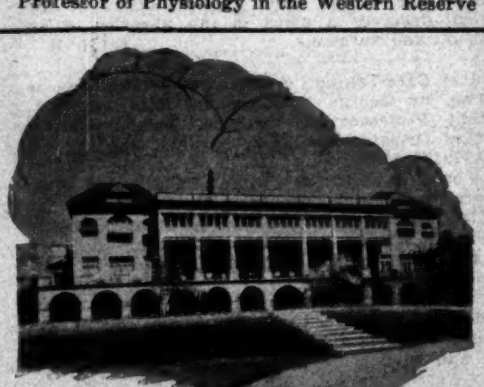

versity, Cleveland, Ohio; assisted by Roy G. Pearce, A. C. Redfield, N. B. Taylor, and J. M. D. Olmstead, and by others: fifth edition; with 291 illustrations, including 9 plates in colors; The C. V. Mosby Co., St. Louis, Mo.; $11.00.

All that need be said for this author and his book, perhaps, is that the book has gone into five editions since its first appearance in 1918.

The reviewer marvels at the work involved in the preparation of the manuscript for such a work. There are 1054 pages, 103 chapters, 291 illustrations and many references to the literature. At the end of chapter 54, on shock, are 75 references to the literature.

The author has attempted to correlate the abstract facts of physiology with the practical side of medicine and he has succeeded. Chapters 51 and 52 discuss electrocardiography in such a way that medical students and doctors who are new to the subject may grasp the fundamentals. These are difficult to find elsewhere.

Part VIII of the book, with chapters 72 to 77 inclusive, deals with the excretion of urine.

Part IX., with chapters 78 to 97 inclusive, discusses metabolism. Part X, with chapters 98 to 103, presents the proven facts of endocrinology.

When one wishes to cull theory from fact, the unproven from the proven, MacLeod is a safe port in which to sail.

As we have said before all physicians should read at least one new book on basic sciences each year. This one is a good one for 1927.

Getting Well and Staying Well—A Book for Tuberculous Patients, Public Health Nurses, and Doctors; by John Potts, M. D., Fort Worth Texas; introduction by J. B. McKnight, M. D., Superintendent and Medical Director, Texas State Tuberculosis Sanatorium; The C. V. Mosby Co., St. Louis; 1927; $2.00.

This type of book must be judged primarily by one criterion, namely: readability. The author writes in an easy, fascinating, comprehensible style. The doctor who picks up this book early in an idle evening will not be likely to lay it down until he has raed it from cover to cover. The nurse interested in tuberculosis—and the patient, too—wil read this book nearly as understandingly as can the physician, so well has the author done his task.

Those for whom the book is intended may read it with profit. Doctors doing tuberculosis work will find it a safe book to recommend to their tuberculous patients. O. H. B.

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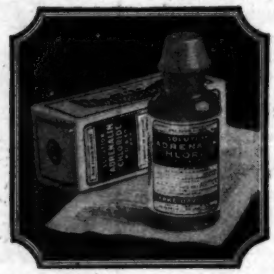

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